THE IRON TRADE REVIEW

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Carnegie and Other Companies Make Records

On Sales, Specifications and Shipments—Pig Iron Production Increases—Selling of Lake Ore Progresses

Some remarkable records for sales and specifications of finished products were made during March by subsidiaries of the Steel Corporation and also by some independent companies. During the few days immediately preceding April 1, when many contracts expired, there was heavy specifying. Some mills in the Chicago and Pittsburgh districts now have more business on their books than ever before in their history, and a very important feature of this business is that an unusually large percentage is for early delivery. The month made a new record for shipping orders and specifications for the leading finished lines of steel of the Carnegie Steel Co. This includes rails, billets and sheet bars. The gain over February was over 20 per cent, and the February gain over January was almost an equal amount. The first quarter shows the highest record for shipments and for specifications in the history of the company for these departments. The production, while heavy, is not made public. The Central plant at Cleveland of the American Steel & Wire Co. made a new record for pig iron production last month.

The prospect of an early settlement of the wage controversy in the bituminous fields and a more favorable outlook in the anthracite region have been among the developments contributing toward better conditions in the iron trade.

Pig Iron Production

Production of coke and anthracite pig iron for March was 2,411,750 tons, an increase of 312,954 tons over February. The March production was the largest since April, 1910, when 2,477,700 tons were made. The increase in March over February was in steel works' furnaces, with the exception of less than 1,000 tons. Owners of a number of merchant furnaces are watching conditions closely and planning to blow-in their stacks if pig iron prices advance 50 cents to $1 during the next month or two.

Iron Ore

The sale of lake ores has progressed steadily during the past few days and several hundred thousand tons have been sold, including more than a hundred thousand tons for eastern delivery. Owing to the unusual interest displayed by eastern buyers, the east has been the mecca for representatives of lake ore during the past few days and negotiations covering large tonnages are pending. In some cases, sharp competition developed and sellers of eastern ore are meeting low prices made by lake interests. In spite, however, of concessions being made by some sellers of lake ores, a considerable tonnage is being reserved with the expectation that prices will be higher later in the year.

Finished Material

In finished lines, there is increasing firmness of prices following recent indications of more harmonious relations of some sellers. It is estimated that there are fully 750,000 tons of finished products are unclosed because buyers hesitated to place the business at prevailing prices. This tonnage includes 150,000 tons for a car builder, who delayed too long. Prominent manufacturers predict an advance of bars to 1.20c, and shapes and plates to 1.25c, Pittsburgh, in a few days. It is undoubtedly true that recent advances are being more generally maintained than they were a week ago, but irregularities have not yet entirely disappeared.

Railroad Buying

The Harriman lines have put out an inquiry for 15,000 cars, and the Santa Fe is also inquiring. Pittsburgh rail mills made the best record for production in their history last month. The Chicago, Milwaukee & St. Paul has ordered 25,000 tons of rails, and the Chicago, St. Paul, Minneapolis & Omaha 11,000 tons from the Illinois Steel Co. A Texas road has taken 12,000 tons of open-hearth rails from the Tennessee Coal, Iron & Railroad Co. It is understood that two orders for western and southwestern lines, aggregating 50,000 tons, have been closed, but no details are announced. The American Coast Line is taking bids on 1,600 tons of material for bridges.

Pig Iron

The market for steel-making pig iron shows marked improvement. The Brier Hill Steel Co. has sold 40,000 tons of Bessemer to the Republic Iron & Steel Co., at $14.25, valley, and delivery will begin at once. Nearly all the leading eastern consumers of basic have either purchased or are sounding the market for round tonnages. One steel company, which has not been in the market for a long time, is figuring on a block of from 10,000 to 15,000 tons and would probably buy considerably more at a satisfactory price. A Harrisburg company is inquiring for from 7,500 to 10,000 tons, and the Phoenix Iron Works for from 5,000 to 6,000 tons. A boiler maker has purchased 8,000 to 10,000 tons of No. 2 plain and No. 2X foundry grades for New Jersey and Ohio plants, and deliveries for some of the tonnage extend to the end of 1913. The prices ranged from $14.15 to $14.45, delivered.

PITTSBURGH

Pig Iron Strong---Rail Production Record Made

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., April 2.

Continued strength shown in the pig iron market during the past week in the face of the reduction in iron ore prices, appears to have been proven by much quiet buying of basic and Bessemer grades without any weakening in prices. Activity is also noted in foundry and gray forge iron, both of which are higher. Semi-finished steel has been moving more freely and prices have become firmer at points where a softness appeared a week ago. Both foundry and furnace cokes showed some effect of the elimination of miners' strike possibilities and were quieter in tone with foundry grades slightly weaker. The rail production for March exceeded any former record of Pittsburgh mills and March tonnage records have been the highest of any month in some years, with no prospect of a slowing down for some time ahead. Structural material, plates and shapes, are firm in price, but new business has not been important.

Pig Iron.—Pig iron sales during the past week have been much larger than the trade has been generally aware of. The buying of Bessemer is understood to have been not so active as basic iron, but prices have been well sustained, and gains of the past month indicate a strengthening of these prices. Basic sales have ranged from $13 to $13.25 for second quarter delivery, and as high as $13.50 for third quarter iron. Foundry iron has been fairly active. Some new inquiries appeared for fair sized tonnages, one for 2,500 tons for last half delivery by a Pittsburgh car building company and some 500-ton lots for last half at $13.25. There are reported, also, some small sales for second quarter delivery at $13.50, valley. The demand for gray forge iron has been exceptionally strong and active. A sale of 7,500 tons was closed this week on a basis of $12.90, furnace, and this is for prompt shipment, though it extends through the second and into a part of the third quarter. The increasing strength in southern iron has influenced the prices materially, while coke is a factor that bears strongly on prices and offsets the low ore cost now ruling. The Republic Iron & Steel Co. has issued notices of an advance in southern foundry of 25 cents to 50 cents a ton, holding firmly to from $10.75 to $11 for second and third quarter iron, and declining to quote on fourth quarter for the present owing to the uncertain condition of the coke market. The situation seems to promise a general tendency upward of all northern grades of iron. The average prices of one interest on Bessemer and basic for March shows $14.06 for Bessemer, and $12.767 for basic. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	13.00
Basic, Pittsburgh	13.90
No. 2 foundry, Pittsburgh	14.15
Gray forge, Pittsburgh	13.65
Malleable, Pittsburgh	13.90

(Second Quarter.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, Pittsburgh	13.65
No. 2 foundry, Pittsburgh	14.15
Gray forge, Pittsburgh	13.65
Malleable, Pittsburgh	13.90

Ferro-Alloys.—There has been a little more inquiry for ferro-manganese for forward delivery, and some small lot sales for prompt shipment were reported at $45, Baltimore. While there is not much manganese in the market, as a rule consumers are fairly well covered for the first half of the year, and are merely looking forward to the second half for possible requirements. Those who are making inquiries on the second half delivery are getting quotations of $41, Baltimore, quite freely. Ferro-silicon 50 per cent grade is unchanged and the demand is quiet at $70 to $71. Domestic grades are unchanged. We quote the market as follows:

We quote ferro-manganese nominally at $41, Baltimore, for prompt and forward delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted nominally at $70 to $71, Pittsburgh, for prompt and forward delivery; 12 per cent, $22; 11 per cent, $21; 10 per cent, $20, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—The demand for plates has been largely in specifications against existing contracts. During the past week some small car orders were booked including the Bingham & Garfield railroad for 60 steel gondola cars to the Standard Steel Car Co., and the distribution of 67 steel passenger coaches by the Pennsylvania railroad, 27 of which were given to the Pressed Steel Car Co., and 20 to the American Car & Foundry Co., and 20 to the Standard Steel Car Co. Inquiries that are new include 2,000 freight cars for the Denver & Rio Grande railroad, but it is understood that there are other roads, including the Harriman lines, who are contemplating coming into the market for a large number of new cars. The demand for ship plates is quiet for the time being. Several large orders in the east are still undetermined, and some smaller ones for lake yards are temporarily held up. As a rule, the plate manufacturers are more optimistic, and look for a decided improvement in the tone of the buying within the next few weeks. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.15c to 1.20c. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½ inch to and including ⅜-inch plate on thin edge, 0.10c; under ⅜ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—There is a better tone to the sheet trade with indications that the larger manufacturers are inclined to advance prices slightly in order to recover some of the lost ground of the past winter, by raising the minimum quotation to $1.85 for No. 28 gage black sheets. It is understood that the leading interest has taken this stand and is being followed by a number of large independent companies, although there are still some weak spots in the middle-west to offset this. Galvanized sheets are very firm at $2.85 to $2.90, and there is a good demand with liberal specifying against contracts for both grades. The record for March has been an excellent one for shipments, and had

it not been for the severe car shortage, it would have surpassed any month for a number of years, if not in the history of many companies. We quote the market as follows:

Blue annealed sheets No. 10 gage, 1.35c to 1.40c; black annealed sheets, No. 28 gage, 1.80c to 1.90c; galvanized sheets, No. 28 gage, 2.85c to 2.90c; painted roofing sheets, $1.35 per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets, $2.45 per square for No. 28 gage, 2½-inch corrugation, f. o. b. Pittsburg.

Tin Plate.—The current demand for tin plate in the shape of new business is seasonably light, but specifying against existing contracts is more liberal. Mills are better employed and are making shipments readily. A number of can companies have started operations, are increasing production, and are stocking heavily against the summer demand. Prices are slightly firmer and each week seems to diminish the talk of low priced tin plate on a basis of $3.30. It is difficult to get any considerable business at $3.35 per base box at this time as the size of the orders necessary to attract this price makes them rare at this season of the year. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.35 to $3.40, f. o. b. mill, Pittsburgh district.

Rails and Track Material. — New business in the rail market has been largely confined to buying from traction roads, that has been coming into the market steadily for relatively small tonnages, which in the aggregate, represent a very satisfactory volume of orders for standard sections from 60 to 80-pound rails. Leading railroads are liberally specifying against existing contracts, and are increasing the demand upon the mills for shipments, so that the month of March has closed with the best record of production by the leading interest, surpassing February by a surprising tonnage, and February in turn surpassing January, making the first quarter the best in production in the history of the Pittsburgh rail mills. The light rail demand is keeping up with the firmer tone of prices, and the advance noted last week is being fully maintained. The clearing up of the mining situation is bringing out considerable light rail tonnage that had been held in abeyance pending the adjustment of this difficulty. The demand for track material is increasing, but prices have not shown any change. Splice bar, bolt and spike mills are running on a better schedule than for some months, and are specifying more heavily against billet contracts, and in some cases increasing their contract requirements. The market is quoted as follows, with the base price on open hearth steel rails 1.34c per pound at the mill.

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.15c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.20c to 2.25c, Pittsburgh.

Railroad Spikes

4½, 5 and 5½ and 9-16	$1.40
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x ⅝	.20
3, 3½, 4 and 4½ x ⅜	.30
2½ x ⅜	.40
2½, 3 and 3½ x ⅝	.60
2 x ⅝	.80

Steel.—There is increased activity over a week ago in the semi-finished steel market, and indications point to a generally sold up condition in both rolling billets and sheet bars by all the leading producers. Bessemer and open hearth rolling billets are being held firmly at $20, Pittsburgh, while Bessemer sheet bars are practically sold up for some time ahead, and $21 is the bottom of the market for Pittsburgh delivery Open hearth sheet bars, which were sold somewhat freely at $20.50, Pittsburgh, a week ago, are firmer to-day, and while some large orders may be placed at this figure, the bulk of the business appears to be established now at $21. The increase in demand from consumers, both against existing contracts and enlarging contract requirements for the second quarter, has had much to do with the stronger tone to the open hearth sheet bar market. The improvement in the eastern market has had its influence locally, and forging billets are now held firm at $28. We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $20, with the usual extras for size and analysis, and open-hearth rolling billets, $20; Bessemer sheet and tin bars are quoted at $21, and open-hearth sheet bars are quoted at $20.50 to $21, f. o. b. Pittsburgh, with full freight to destination added. Forging billets are quoted at $28, Pittsburgh.

Hoops and Bands.—The demand for hoops and bands continues active. Specifications are heavy, and shipments continue large as the season advances. Prices are very firm at 1.30c for hoops, and 1.15c for bands. While it may be possible that business is going at 1.25c for hoops, it is believed this price has become more rare than at any time this season. We quote the market as follows:

Hoops in carload lots, 1.25c to 1.30c, Pittsburgh; in less than carload lots, 1.40c; bands, 1.15c, base, with net extras, as per standard steel.

Merchant Bars. — The advance in the minimum price for steel bars to 1.15c, Pittsburgh, has stimulated the market and started more general specifying against contracts as well as encouraging new business. The higher price is being well sustained, not only by the leading interest, but by all large producers. Iron bars are a little more active, and there is a better specifying against contracts with prices remaining stationary. We quote the market as follows:

Common iron bars, 1.30c to 1.35c, Pittsburgh; Bessemer and open-hearth steel bars, 1.15c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3 inch, 1.25c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35 advance. Cold rolled and ground shafting, 65 per cent off in carloads and 60 and 10 per cent in less than carloads, delivered in base territory.

Muck Bar. — Inquiries are still slow in appearing, and the larger producers are operating only part time, or are still remaining idle on production. Prices remain nominally unchanged, and we quote $28 to $29, Pittsburgh.

Structural. — The fair run of inquiries for small lots of structural material continues, but fabricators, because of keen competition, say that prices are still weak from their standpoint. Manufacturers are holding firmly to 1.20c, Pittsburgh base, for shapes and plates, and with specifications coming in sufficient volume to keep the mills generally well occupied on running contracts. There is no disposition to lower these prices. The only contract placed during the past week of any moment was from the city of Mobile, Ala., for 660 tons for a pier shed, which was awarded to the McClintic-Marshall Construction Co. Some small lettings went to the American Bridge Co. We quote the market as follows:

Beams and channels, 15 inches and under, zees, 1.15c to 1.20c; tees, 1.15c to 1.20c; angles, from 3 to 6 inches, 1.15c to 1.20c; over 6 inches, 1.25c to 1.30c; universal and sheared, 1.20c to 1.25c; over 15 inches, 1.30c to 1.35c; plates, 6¼ inches wide and wider, 1.30c.

Merchant Pipe. — This has been a quiet week in the pipe market, but inquiries have increased, especially for merchant pipe, and the trade appears to be on the verge of opening for the spring demand on a large scale. Prices are very firm. A good many of the larger jobbers have covered for their requirements and are protected through the first half of the year at present prices. It is understood that before this period has passed, there will be some changes made in the discount list, which will tend toward a higher price for all merchant pipe. There is one new inquiry in the market for steel line pipe, calling for from 15 to 20 miles for Ohio delivery, and another for from 25 to 35 miles, which is expected will

develop into business by the end of this month and is for West Virginia delivery. We quote the official discount to jobbers, subject to the usual preferential discount to the larger buyers, as follows:

Iron and Steel Pipe Basing Prices

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch	74	54	68	48
⅜ inch	75	65	69	53
½ inch	78	68	72	59
¾ to 1½ inch	81	73	75	64
2 to 3 inches	82	75	76	65
	Lap weld.			
2 inches	79	72	72	63
2½ to 4 inches	81	74	74	66
4½ to 6 inches	80	72	73	65
7 to 12 inches	77	68	71	61
13 to 15 inches	55	..	47	..
Extra Strong, Plain Ends.				
	Butt weld.			
⅜, ¼, ⅜ inch	70	60	65	55
½ inch	75	69	70	63
¾ to 1½ inch	79	73	74	65
2 to 3 inches	80	74	75	66
Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	76	70	71	63
2½ to 4 inches	81	74	74	66
4½ to 6 inches	77	71	72	65
7 to 8 inches	70	60	65	55
9 to 12 inches	65	55	60	50
Double Extra Strong, Plain Ends.				
	Butt weld.			
½ inch	65	59	60	52
¾ to 1½ inch	68	62	63	55
2 to 3 inches	70	64	65	57
Double Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	66	60	61	52
2½ to 4 inches	68	62	63	57
4½ to 6 inches	67	61	62	56
7 to 8 inches	60	50	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent, merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price.)

Boiler Tubes. — Merchant boiler tubes are quiet as a marketable product, but there is a sharp increase in the demand for locomotive boiler tubes, and an increase in specifications against existing contracts, which has affected all sizes. The official discount on charcoal and iron boiler tubes follows:

Steel

1¾ to 2¼ inch	65
2½ inch	67½
2¾ to 3¼ inch	72
3½ to 4½ inch	75
5 and 6 inch	67½
7 to 13 inch	65

Charcoal Iron

1½ inch	48
1¾ to 2¼ inch	50
2½ inch	55
2¾ to 5 inch	60

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products.—The better tone to the market for wire products of a week ago has continued, both as to specifications against old contracts, and inquiry on new business. Mills are running on a better schedule and making larger shipments. It is believed that all contracts on the old price of 1.50c for wire and wire nails, have been cleared up, and such orders as are now running are on the $1 a ton advance, which will likely continue for another 30 to 60 days. Inquiries for new business for forward delivery are being quoted at $1.60 quite firmly, but it is believed that most producers will extend their $1.55 contracts over the first half of the year on assurance of any reasonable tonnage. We quote the market as follows:

Wire nails, jobbers, carload lots, $1.60; retailers' carload lots, $1.65; cut nails (western makers), jobbers' carload lots, $1.55 to $1.60, painted barb wire, jobbers' carload lots, $1.60; retailers' carload lots, $1.65 with 30c for galvanizing; plain wire to jobbers in carloads, $1.40; and to dealers, in carloads, $1.45; polished staples, $1.60; galvanized staples, $1.90.

Wire Rods.—Wire rods are in active demand at firm prices, and consumers are specifying more freely during the past week against contracts. The minimum of $25.50, Pittsburgh, for prompt shipment, and $26 on forward delivery, are being held with very few low-priced orders being accepted. We continue to quote, however, $25.50 to $26 for Bessemer and open-hearth wire rods.

Coke.—There is a stronger tone to the demand for furnace coke, and the past week has witnessed higher prices. In face of an adjustment of the coal mining wage scale, and suspension of the rush for reserve stocks by large consumers, some sales of as high as 1,000 tons of furnace coke were made at the opening of this week at $2.40, ovens, and this price is still being quoted on high grade Connellsville product. Foundry coke, which at the close of last week was being sold at $2.25, ovens, was weakened, and is now being quoted at $2.75 to $3, according to grades. The urgent demand seems to have been fairly well cared for. There is, however, very little spot coke available, and the box car shortage is still a very important factor. While furnaces are not now gathering in a large amount of free coke, there is in sight an increased consumption through the blowing in of additional furnaces that have been idle and that depend on the Connellsville region for their coke supply. This, in a measure, will be offset by the lessening demand on the coking coal mines for coal, and render it impossible for coke companies to dispose of raw coal at a satisfactory price, thus turning such coal into legitimate channels again. Heavy floods which swept the entire coke country last week were responsible for a drop in production to nearly the same tonnage that the field advanced the prior week, the actual loss being nearly 10,000 tons, while shipments decreased almost 400 cars for the same reason. *The Connellsville Courier* showed a production of 398,847 tons last week as against 408,237 tons for the prior week; the loss was about equally divided between the merchant ovens and the furnace ovens. We quote standard Connellsville furnace coke at $2.25 to $2.40 for prompt shipment, and on contract at $2.15 to $2.25. For standard Connellsville foundry coke we quote, $2.75 to $3, ovens, for spot shipment, and $2.75 to $2.90, ovens, on contract. Contracts placed this week include two with an aggregate of 12,000 tons a month for three months for furnace coke, which it is understood, were placed at $2.15, ovens.

Old Material.—Large consumers of heavy melting scrap continue to offer from 25 to 50 cents a ton off the lowest prices quoted by dealers, and are apparently standing firm on that basis. The fact that most of these large consumers are fairly well supplied with material indicates that they will not meet the present views of the dealers, at least for the time, and only small sales are noted in the market at this time, varying from $12.75 to $13 for this grade of old material. There is, however, an advance noted in malleable scrap of 50 cents a ton, the market is now being quoted from $12.50 to $13. Iron axles have also gained 50 cents a ton and are quoted at $21.50 to $22, with a fair demand ruling for this grade. On all the other grades, the prices remain unchanged and inquiries are light. The market appears to be practically a deadlock on the chief grades of old steel, and it will take some time to clear this situation up. The influx of new stocks has not been large as yet. The roads remain bad throughout the country districts, and dealers are unable to gather any considerable quantity or get a good line on the available supply for the spring and summer demand. We quote gross tons, delivered in the Pittsburgh district, including Monessen, Brackenridge, Steubenville and Follansbee, as follows:

Heavy melting scrap	$12.75 to 13.00
Rerolling rails	13.00 to 13.50
Malleable	12.50 to 13.00
Bundled, sheet scrap	11.00 to 11.50
Iron axles	21.50 to 22.00
Old iron rails	15.00 to 15.50
Stove plate	9.00 to 9.50
No. 1 wrought scrap	12.50 to 13.00
Old car wheels	12.50 to 13.00
Low phosphorus	14.75 to 15.00
Machine shop turnings	9.75 to 10.25
Cast borings	9.50 to 9.75
No. 1 cast scrap	12.50 to 12.75

A. W. Gibbs, chief mechanical engineer for the Pennsylvania Railroad Co., advises, in regard to the reported building of shops by the company at Sunbury, Pa., that no new work is being contemplated there at present.

CHICAGO

Some New Records for Business On Books

Office of THE IRON TRADE REVIEW,
1328 Monadnock Blk., April 2.

Some mills in the Chicago territory now have more business on their books than ever before in their history. The price advances on finished materials, which have been noted recently, seem to be well maintained and the market shows no evidence of a reaction. Business is well distributed, although the bulk of the tonnage is still confined to the heavier finished materials, including bars, shapes and plates. Additional rail awards have been made recently. The Illinois Steel Co. will roll 25,000 tons of standard sections for the Chicago, Milwaukee & St. Paul, and has also booked 11,000 tons from the C., St. P., M. & O., which is a part of the Northwestern system. The minimum on plates and shapes is now 1.35c, Chicago, and bars are being sold at 1.30c. Fabricating contracts last week were large and well distributed, including 5,325 tons for the First National Bank building at Milwaukee, and 2,218 tons for the Kahn building, San Francisco.

Pig Iron. — A moderate buying movement has developed and at the same time there is strong evidence of prices equivalent to $10.25, Birmingham, on southern foundry iron for shipment over the remainder of this quarter. A Rock Island foundry is understood to have bought 500 tons on this basis. There are several inquiries in the market from Rockford and Freeport, Ill., and it is understood that buyers have been offered southern iron on the $10.25 basis for delivery up to June 30. A local manufacturer of pipe fittings has purchased 1,000 tons of 9 per cent silicon iron at a price said to be a shade better than $17.65, delivered. A Milwaukee foundry is in the market for 200 tons of 10 per cent silicon iron.

For delivery over the last half of the year, southern iron is considerably firmer and the ruling price appears to be $15.10, Chicago. Sales of northern iron for delivery over the last half have been rather heavy recently and better prices have been realized, ranging from $14.25 to $14.50 at the furnace.

The following prices represent the market for Chicago delivery, except local northern foundry and malleable Bessemer, which are quoted f. o. b. furnace:

	Third quarter.	Last half.
Lake Superior charcoal	$16.50	to 16.50
Northern foundry No. 2	14.00	to 14.35
Southern foundry No. 2	14.85	to 15.10
Southern silveries, 5 per cent sil.	15.60	to 16.10
Jackson co. silveries, 8 per cent	17.40	to 17.90
Malleable Bessemer	14.00	to 14.35
Alabama basic	14.85	to 15.10

Billets.—The demand for billets remains good and prices are practically unchanged. As previously reported, the local makers are out of the market on rolling billets. We quote, f. o. b. Chicago, open-hearth forging billets, $27, and re-rolling billets, $22.60.

Merchant Bars. — The tonnage handled by the bar iron mills is increasing slowly, but the price does not respond to any extent. The proportion of bar iron sales at 1.15c, Chicago, and higher, is increasing, but there is still some tonnage available at 1.12½c. Specifications for steel bars are on a very liberal basis and the market is perceptibly firmer. Some eastern mills are quoting 1.15c, Pittsburgh, equivalent to 1.33c, Chicago. There is very little new business now being placed at less than 1.30c, Chicago, although it is believed that attractive specifications from a responsible buyer would still bring out prices as low as 1.25c, Chicago. The market on shafting is more active.

We quote, f. o. b. Chicago, as follows:

Bar iron, 1.15c to 1.20c; hard steel bars, rerolled, 1.17c to 1.20c; soft steel bars, bands and small shapes, 1.25c to 1.38c, base; hoops, 1.48c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 60 per cent off list for carload lots, 55 per cent off for less than carloads.

On iron and steel from local stock, we quote as follows:

Bar iron, 1.50c to 1.60c per pound base; soft steel bars, 1.50c to 1.60c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material. — Fabricating prices have stiffened perceptibly and the minimum on plain material is now firmly established at 1.35c, Chicago. This is an advance of $1 a ton. Over 11,000 tons of shapes will be required for fabricating contracts reported let in the west last week. The First National Bank building, Milwaukee, 5,325 tons, will be fabricated by the Modern Steel Structural Co. Milliken Brothers have a contract for the Kahn building, San Francisco, 2,218 tons. The American Bridge Co. has taken 560 tons for an addition to the Art Institute of Chicago; 660 tons from the Des Moines & Southern railroad for a viaduct over the Des Moines river, near Boone, Ia., and 396 tons for a public building at Olympia, Wash. The Midland Bridge Co. has contracts for 496 tons of bridges and the Hydraulic Engineering Co. has let 673 tons for lock gates at Keokuk, Ia. Other structural contracts are as follows: High school at Kalamazoo, Mich., 149 tons, to Hauser, Owen & Ames, Grand Rapids, Mich., and a lead plant at Grassele, Ind., 1,200 tons, let by the Anaconda Copper Mining Co. to the Kenwood Bridge Co.

We quote, mill prices, f. o. b. Chicago, as follows:

Beams and channels, 15 inches and under, 1.35c to 1.38c. For extras, see Pittsburgh report.

Plain material out of stock is as follows:

All angles, 3 inches and larger, including 6 inches, $1.60 to $1.65 per 100 pounds; angles over 6 inches, $1.70 to $1.75 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.60 per 100 pounds, base; channels, 3 inches and larger, $1.60 per 100 pounds, base.

Rails and Track Fastenings.—The tonnage situation from a mill standpoint is much improved and some good orders for immediate shipment have recently been received. The makers have advanced their prices on light rails approximately $1 a ton. This is due not so much to increased business as to a desire to realize profitable figures. Prices of track fastenings are practically unchanged.

We quote, light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 25 to 45-pound, 1.20c to 1.25c; 16 to 20-pound, 1.25c to 1.30c; 12-pound, 1.30c to 1.35c; 8-pound, 1.35c to 1.40c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.50c to 1.55c, smaller size spikes, 1.65c, base; track bolts with square nuts, 1.90c base.

Plates.—The Chicago market on plates may now be generally quoted

at 1.35c, which is $1 a ton above the figures prevailing recently. New business is comparatively light, but the tonnage of specifications continues unprecedented. In addition to heavy buying from car builders, there is a very large amount of business coming from boiler makers and general manufacturers The Wabash has bought 750 automobile cars from the Western Steel Car Co. and 500 box cars from the Haskell & Barker Car Co. It has also purchased 1,000 stock cars from the American Car & Foundry Co. The Northern Pacific has increased its order with the American Car & Foundry Co. for freight cars from 1,000 to 2,600. The Denver & Rio Grande is reported to be in the market for 2,000 freight and passenger cars. The Atchison, Topeka & Santa Fe, reported last week as being in the market for 50 passenger cars of various descriptions, has ordered this equipment from the Pullman Co., Chicago.

We quote, mill prices, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6⅜ to 100 inches wide, 1.35c to 1.38c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.60c.

Sheets.—The volume of sheet business is taxing the capacity of the mills in this district and prices are now fairly well established at 3.08c, Chicago, for No. 28 galvanized and 2.08c for No. 28 black. A great many sheet contracts expired on April 1 and under present conditions, with plenty of tonnage on their books, the makers are not anxious to renew these obligations, except at the higher asking prices which are now prevailing. The movement of sheets out of stock continues heavy.

We quote store prices, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 1.90c; No. 12, 1.95c. Box annealed, No. 28, 2.30c. Galvanized, No. 28, 3.35c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—Weather conditions have not improved sufficiently to have much effect on the wire business, but sentiment is strong and a heavy run of specifications is expected during the latter part of this month. Makers are maintaining the 1.60c, Pittsburgh, basis on wire nails firmly, so far as new business is concerned.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98; painted barb wire, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98, with 30c for galvanizing; plain wire, jobbers' carload lots, $1.58; retailers' carload lots, $1.63.

Merchant Pipe and Tubes.—An extensive carpenters' strike has been announced in the city of Chicago and it is feared in some quarters that this may result in another tie-up of building operations. If such is the case, it will have an unfavorable effect on the demand for merchant pipe. Up to date building operations have not become general and pipe business is somewhat slack. Quotations on galvanized iron pipe out of stock, Chicago, have been advanced slightly to correspond with new mill quotations. The demand for boiler tubes and industrial tubes is fairly good. Prices seem to be well maintained.

We quote, store prices on merchant pipe and tubes, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
Butt.				
⅛ inch and ¼ inch.	71.2	50.2	63.2	42.2
½ inch	75.2	64.2	68.2	52.2
¾ inch to 1½ inch.	78.2	69.2	71.2	59.2
Lap.				
2 inch	76.2	68.2	68.2	58.2
4½ inch to 6 inch..	77.2	68.2	69.2	60.2
Card Weight.				
7 inch to 12 inch...	74.2	63.2	67.2	56.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch.....	66.2	54.2	60.2	48.2
½ inch	71.2	59.2	65.2	53.2
2 inch to 3 inch...	76.2	64.2	....	....
Lap.				
2 inch	72.2	60.2	66.2	54.2
7 inch to 8 inch.....	66.2	54.2	60.2	48.2
Double Extra Strong.				
Butt.				
½ inch	59.2	47.2	....	....
¾ inch to 1½ inch.	62.2	50.2	....	....
Lap.				
2 inch	60.2	48.2	....	....
4½ inch to 6 inch..	61.2	49.2	....	....
7 inch to 8 inch....	54.2	42.2	....	....

Tubes

	Lap weld Per cent. steel.	Charcoal iron. Per cent.	Shelby seamless. Per cent.
1 inch	39	..	57½
1¼ to 2¼ inch.....	55	40	35
2¾ to 3¼ inch.....	65	50	46
3½ to 4½ inch.....	67½	50	46
5 to 6 inch.....	55	..	..

Cast Iron Pipe.—Bids were opened at Great Falls, Mont., for 382 tons of 12 and 8-inch pipe on March 25, and all proposals were rejected. New bids will be called for in the near future. Bids were opened March 29 at Prince Albert, Sask., on 23,000 feet of water pipe of various sizes. At Moline, Ill., on April 8, bids will be opened for 10,000 feet of 6 and 8-inch pipe.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $26.50; 6 to 12 inches, $24.50, larger sizes, $24; gas pipe, $1 a ton higher.

Old Material.—While the position of the market may be said to be somewhat unstable at present, nevertheless prices have advanced again and many items are now quoted 25c higher. The improvement in the market is due largely to a better demand from melters and also to the fact that until recently it was next to impossible to obtain shipments on orders that had been placed. This situation is rapidly changing, and as the volume of scrap coming to consuming centers increases, the market is expected to turn soft. For the time being, however, quotations are at the highest point this year.

We quote, for delivery in consumers' yards, Chicago, as follows:

Gross Tons

Old car wheels	$13.00 to 13.50
Old iron rails	15.00 to 15.50
Rerolling rails (5 ft. and over)	12.50 to 13.00
Old steel rails (3 ft. and under)	11.75 to 12.25
Frogs, switches and guards	11.00 to 11.50
Heavy melting steel	11.00 to 11.50
Shoveling steel	10.50 to 11.00

Net Tons

No. 1 R. R. wrought	$11.50 to 12.00
No. 2 R. R. wrought	10.50 to 11.00
Arch bars and transoms	14.25 to 14.75
Knuckles, couplers and springs.	10.75 to 11.25
Shafting	14.00 to 14.50
Iron car axles	18.75 to 19.25
Steel car axles	15.50 to 16.00
Locomotive tires	13.50 to 14.00
Dealers forge	9.25 to 9.75
Pipe and flues	8.50 to 9.00
No. 1 cast	11.25 to 11.75
No. 1 busheling	9.25 to 9.75
No. 2 busheling	6.50 to 7.00
No. 1 boiler cut	7.75 to 8.25
Boiler punchings	12.50 to 13.00
Cast and mixed borings	6.25 to 6.75
Machine shop turnings	6.75 to 7.25
Railroad malleable	10.75 to 11.25
Agricultural malleable	9.75 to 10.25
Angle bars, splices, etc., iron..	13.00 to 13.50
Angle bars, steel	13.50 to 11.00
Stove plate and light cast scrap	9.75 to 10.25

STATEMENT FILED

By Midvale Steel Co. for Period Ending Oct. 31, 1911.

The Midvale Steel Co. has filed a statement of its condition on Oct. 31, 1911, with the secretary of state of Massachusetts. The assets are as follows: Real estate, $2,848,506, compared with $2,670,224 in 1910; machinery, $7,812,025, compared with $8,018,309; merchandise, $274,568; manufacturing, merchandise, material and stock in process, $2,840,933, compared with $2,818,414; cash and debts receivable, $1,280,849, compared with $1,536,679; investments, $300,000, compared with $200,000. The total for the past period is $15,356,881, against $15,243,626 for the previous one.

The liabilities include the following: Capital stock, $9,750,000, compared with $9,750,000; accounts payable, $296,191, compared with $438,506; floating indebtedness, $1,350,000, compared with $1,250,000; special reserve, $8,562; insurance fund, $300,000, compared with $200,000; surplus, $3,652,200, compared with $3,605,120.

CINCINNATI

Tendency Toward Higher Pig Iron Prices

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg., April 2.

Pig Iron.—The pig iron market here is somewhat unsettled, with a tendency towards better conditions. Some southern furnaces have notified their local dealers that the price of No. 2 foundry iron has been advanced to $10.75 to $11 for third quarter, and $11 for fourth quarter shipment, Birmingham basis. The other dealers, however, are still holding for $10.50, Birmingham, for both spot and third quarter delivery. The reason given for this advance is that most furnaces have very little stock on hand, in some instances being behind with deliveries on contracts, and do not care to book orders ahead at the present prices, with the outlook so undecided. These makers, therefore, are not soliciting any contract business, preferring to wait until the market becomes more settled. Another direct reason given is that the strained conditions in the coal fields and the shortage of coke has caused furnace owners to become cautious and they do not care to book orders at low prices as long as there is any danger of encountering a scarcity of their coke supply in the near future. This seems to be the attitude assumed by all furnaces, whether they have advanced their prices or not. Those Tennessee furnaces that were holding for $10.25, Birmingham basis, last week, have practically all advanced to $10.50, and this is now the minimum quotation in the general market. Some small sales are reported now and then at $10.25, but these are not important enough to have any noticeable effect. No sales, however, above $10.50, Birmingham, are reported to have been made up to the present time. Southern Ohio iron is holding fairly well at $13.50, Ironton, and orders are being booked at this price, although not to any large extent. The lull in the market that resulted from the advance on both northern and southern grades a little over a week ago still continues, and buying and selling is being done mostly in small lots. It is rumored that some good sales have been made in secret, but this has not been confirmed. Inquiries here include 1,500 tons of charcoal iron for third quarter delivery to a central Ohio melter; 500 tons of northern and 500 tons of southern iron for last half delivery to a Michigan user, and 500 tons of a special analysis grade from a southern Ohio manufacturer. Freight rates from Birmingham, $3.25, and from Ironton, $1.20. We quote Cincinnati prices as follows:

Southern foundry No. 2	$13.75 to 14.00
Southern foundry No. 3	13.00 to 13.25
Southern foundry No. 4	12.75 to 13.00
Southern gray forge	12.50 to 12.75
Mottled	12.25 to 12.50
Southern No. 1 soft	13.75 to 14.25
Southern No. 2 soft	13.25 to 13.75
Standard southern car wheel	25.25 to 25.50
Northern No. 2 foundry	14.70
Northern No. 3 foundry	14.20
Northern No. 4 foundry	13.95 to 14.20
Jackson co. 8 per cent silicon	16.45 to 16.95

Coke.—The coke market also appears to be somewhat unsettled. One large dealer reports that the market has broken, and that today he is willing to accept business at a decline of 50 cents a ton from prices he quoted 48 hours ago. The reason given for this is that the miners and operators in the bituminous regions have reached an agreement, and the recent advances of Connellsville coke have been based largely upon this strike. Other dealers, however, are holding firm at the higher prices. Some companies with tidewater facilities, are not so much concerned with this strike as the one in England, and consequently have not made any reductions. The situation with some others is that they are finding it more profitable to sell the coal direct rather than to turn it into coke, and are doing this, in some instances preferring to put out their ovens. The extremely poor railroad facilities in general have not been bettered to any extent. The prices quoted below apply only for today, as conditions at present are such that changes are predicted to appear at any time. One dealer reports that he has no prompt brands on hand. We quote from the leading coke producing districts as follows:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.75 to 3.25	$2.65 to 3.00
Furnace coke	2.25 to 2.50	1.90 to 2.40
Wise county district:		
Foundry coke	$2.75 to 3.00	$2.50 to 2.75
Furnace coke	1.90 to 2.25	*Sliding [scale basis
Pocahontas district:		
Foundry coke	$2.75 to 3.00	$2.40 to 2.75
Furnace coke	2.00 to 2.25	2.00 to 2.25
New river:		
Foundry coke	$3.00 to 3.25	$2.50 to 3.40
Furnace coke	2.25 to 2.50	2.15 to 2.40

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16 2-3 per cent of the amount over $9 which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—Bars and structurals are both reported firmer, the former at 1.15c, and the latter at 1.20c, Pittsburgh basis. The market for finished products in general is somewhat improved, and local firms and branches are doing business on a better scale. The plans for the new Gibson house, this city, are about completed, and will be made public soon. The local sheet mill is upon a firmer basis regarding its recently advanced prices, and sales, if anything, are improving. Its quotations are as follows, all f. o. b. Pittsburgh basis: Sheets, black, No. 28, 1.85c to 1.90c; sheets, blue annealed, No. 10, 1.40c; and sheets, galvanized, No. 28, 2.85c to 2.90c. For mill prices, see Pittsburgh report.

Warehouse prices, while unchanged, are considerably firmer. Business also is somewhat better, sales last week exceeding those of the week previous. Indications are that there will be a steady improvement as the weather becomes better, and dealers are becoming more optimistic. We quote warehouse prices, f. o. b. Cincinnati, as follows:

Steel bars, 1.60c base; iron bars, 1.55c to 1.60c base; structurals, 1.70c base; plates, ¼ inch and over, 1.70c base; sheets, blue annealed, No. 10, 1.90c base; rivets, cone head, 2.25 base; cold rolled shafting, 60 per cent discount; boiler tubes as follows: 1¾ to 2¼ inch, 61 per cent discount; 2½ inch, 63 per cent discount; 2¾ to 3¼ inch, 66 per cent discount; 3½ to 4½ inch, 68 per cent discount; and 5 to 6-inch, 61 per cent discount; and soft steel cold twisted concrete bars, cut to length as follows: ¾ inch square and larger, 1.70c; ⅝ inch square and larger 1.80c; ½ inch square and larger, 1.90c; ⅜ to ⅜ inch square and larger, 2.10c; ¼ inch square and larger, 2.20c to 2.30c.

Old Material.—The recent advances in the price of pig iron and coke have not had any good effect upon the scrap iron market, as melters are not buying more than actual requirements preferring to wait until the market settles. Scrap iron prices appear to be a little firmer, and business fairly good, considering the conditions under which it must be carried on. Buying and selling continues to be done in small lots, no large lists having been on the market during the past week. The weather for the past few days has also been somewhat of a

handicap. A small sale of steel melting scrap was made last week at $10. According to a summation of reports, prices are as follows:

Gross Tons

Old iron rails	$12.00 to 13.00
Old steel rerolling	11.00 to 11.50
Old iron axles	18.00 to 18.50
Steel melting scrap	9.50 to 10.25
Car wheels	10.50 to 11.25

Net Tons

Old No. 1 R. R. wrought	$10.00 to 11.00
No. 1 machinery	8.00 to 9.00
No. 1 busheling	8.00 to 9.00
Stove plate	6.25 to 7.00
Machine shop turnings	5.50 to 6.00
Cast borings	4.75 to 5.25
Grate bars	6.00 to 7.00
Sheet iron, bundled	6.75 to 7.75
No. 1 cast scrap	10.00 to 10.50
Heavy turnings	6.00 to 7.00

HAVE CONSOLIDATED

Several Large Worcester Concerns Have Been Combined.

Worcester, Mass., April 3.—A consolidation of the business and plants of the Prentice Bros. Co., F. E. Reed Co., Reed Foundry Co., Reed & Curtis Machine Screw Co., and the Crompton Associates, as the Reed Prentice Co., a Massachusetts corporation with $2,500,000 capitalization, was effected yesterday through efforts of Harry W. Smith, the well-known sportsman. Geo. F. Fuller, general manager of the Wyman Gordon Co., is president; F. E. Reed, of the Reed Co., and Vernon F. Prentice, of Prentice Bros. Co., vice presidents; George Crompton, of Crompton Associates, secretary and treasurer; directors, Dr. Homer Gage, George F. Fuller, Frank A. Drury, Lucius J. Knowles, Charles M. Thayer, John F. Keyes, Albert E. Newton, Harry W. Prentice, George Crompton, F. E. Reed, Vernon F. Prentice, Harry W. Smith.

The F. E. Reed Co. was organized in 1875; Prentice Bros. Co. in 1872; Reed & Curtis Machine Screw Co. in 1903; and Reed Foundry Co. in 1901. All the concerns do considerable work for railroads and the United States government. One half of the capital stock of the new concern is 7 per cent preferred, the rest is common stock.

CLEVELAND

Some Ores Held for Advance---Low Prices On Others

Office of THE IRON TRADE REVIEW,
Penton Bldg., April 2.

Iron Ore.—Several hundred thousand tons of ore have been sold during the past week, including more than a hundred thousand tons for eastern delivery. The eastern consumers are continuing to manifest lively interest in lake ores and representatives of prominent Cleveland companies are now in the east. It is understood that some ore bound for England has not been delivered on account of the coal miners' strike in that country, but has been diverted to buyers on this side of the Atlantic, and may interfere somewhat with the sales of lake ore. The ore situation is somewhat mixed. While, on the one hand, concessions have been made to buyers, it is true on the other hand that some selling companies, feeling that prices may advance later in the year, are offering only a limited tonnage of their ores at present prices. Concessions are not expressed so much in the reduction of quotations on base prices as in the lopping off of premiums on certain high grade ores which are due the sellers under the method of calculating ore values. On old range non-Bessemer, $3 is frequently quoted.

The use of large amounts of dynamite is still necessary to loosen ore on docks before shipment and the movement to furnaces does not show much increase. A few good rains would be much more effective than dynamite in loosening the ore.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $3.75; Mesabi Bessemer, $3.50; old range non-Bessemer, $3.05; Mesabi non-Bessemer, $2.85.

Pig Iron—Sales in the immediate Cleveland district are few in number and small in tonnage, but prices are being well maintained. Cleveland agencies having furnaces in other sections report a very satisfactory volume of business. With these interests, shipments are fully up to production. We quote delivered in Cleveland as follows, the higher prices when given being for last half, while the lower quotations are for the first half of the year:

No. 1 foundry	$13.75 to 14.00
No. 2 foundry	13.25 to 13.50
No. 2 southern	14.60 to 14.85
Gray forge	12.50 to 12.75
Bessemer	15.15
Lake Superior charcoal	16.50
Jackson co. 8 per cent silvery	17.05

Coke.—Owing to the prospect of an early settlement of the wage controversy in the bituminous region, foundrymen are not so anxious to add to their supplies of coke and easier conditions prevail. Prices are, however, firm. We quote:

Connellsville furnace coke, $2.25 to $2.40 for prompt delivery, and $2.25 on contract; Connellsville foundry coke, $2.75 to $3.00 for prompt, and $2.60 to $2.75 on contract.

Finished Material.—A large volume of specifications appeared immediately preceding April 1, the date on which many contracts expired. While a few contracts were extended, there were some cancellations and a general cleaning-up of unspecified tonnage. While there is a rather unusual absence of large prospects in structural material, structural shops are busy working on small projects. Recent advances in quotations are being well maintained, except in rare instances.

Old Material.—Activity has slowed down until little new business is coming out. Local consumers of heavy melting steel are merely taking shipments on old contracts, to cover which at $12 some brokers have paid $11.50 and $11.75. The rolling mills have been taking little interest in the market. The Lake Erie works are closed down on account of coal shortage. We quote, gross tons, f. o. b. Cleveland, largely nominal, as follows:

Gross Tons

Old iron rails	$14.00 to 14.50
Old steel rails (under 6 ft.)	11.25 to 11.75
Old steel rails (over 6 ft.)	11.50 to 12.00
Relaying rails	19.50 to 20.00
Old car wheels	11.50 to 12.00
Old steel boiler plate	9.50 to 10.00
Malleable iron (railroad)	11.00 to 11.50
Steel axles	17.00 to 17.50
Axle turnings	8.50 to 9.50
Malleable iron (agricultural)	10.00 to 10.50
Heavy steel	11.00 to 11.50
Country mixed steel	9.00 to 9.50
Bundled sheet scrap	7.50 to 8.00

Net Tons

No. 1 R. R. wrought	$11.00 to 11.50
No. 1 busheling	9.00 to 9.50
No. 1 machine cast	10.75 to 11.25
No. 1 dealers' wrought	9.00 to 9.50
Machine shop turnings	7.25 to 7.50
Pipes and flues	8.00 to 8.50
Wrought drillings	7.25 to 7.50
Stove plate	9.00 to 9.50
Cast borings	7.00 to 7.25
Wrought iron piling plate	15.50 to 16.00
Wrought iron arch bars	14.50 to 15.00

PHILADELPHIA

Good Basic Pig Iron Develops in East

Office of THE IRON TRADE REVIEW,
Philadelphia, April 2.

Recently increased steel-making operations among eastern works are resulting in better conditions in other branches of the market in this section. An active demand for basic pig iron which had been dragging for several months, has appeared and producers are meeting these negotiations with much stronger positions on prices. In other grades the market shows a fair movement at firmer levels. Some sizeable buying of steel scrap has been done at advanced prices. Though uncertainty is still manifest, the favorable developments indicating an early settlement of the coal labor troubles, have had their effect and as consumers are now well fortified against emergency, coal prices have slumped from 75 cents to $1 a ton. The hardening process continues in finished material prices.

Pig Iron.—Probably the most interesting development of the week has been the revival of interest in basic iron to a substantial extent among eastern steel makers. Practically all the leading eastern consumers of this grade have either put out inquiries or are sounding out the market and 30,000 to 40,000 tons of forward requirements has been brought forth. This includes 7,500 to 10,000 tons for third quarter for a Harrisburg steel maker previously noted and 20,000 to 25,000 tons for third quarter put out this week by two other eastern buyers. The development of basic inquiry has accompanied the recent improvement among eastern steel works, which has resulted in a considerable increase in active steel-making capacity. Producers of basic are declining to sell iron except at advances of 25 to 50 cents, and some express a desire not to quote a forward metal at this time in view of coke uncertainties, so that little iron has yet been sold. The receivers of the Central Iron & Steel Co., Harrisburg, have purchased 2,000 tons of prompt basic from a Schuylkill valley furnace at $14.50, delivered, which is 25 cents higher than the last previous sale. It is announced that the seller has no more iron to offer at this price. A Cumberland, Md., steel maker has taken 1,500 tons of second quarter basic from a valley maker. Production of basic in the east at present is confined to but two merchant sellers, Warwick and Bethlehem, and stocks are light. In other grades of iron, a considerable movement continues in a quiet way. Sellers appear to be holding firmly to a minimum of $15 for standard Lehigh and Schuylkill valley brands of 2X, and any iron below this level is confined to other producing sections. A fair number of sales usually for 500 tons or less, is being closed. Virginia makers are still booking iron at $12.50 to $12.75, furnace, for 2X. One active seller there has now accumulated about 20,000 tons of orders. A Delaware river pipe shop is out for 2,000 to 3,000 tons of low silicon iron for May, June and July, and a Pottstown buyer has been in the market for a lot of mill forge. The Pennsylvania railroad inquiry for 4,000 tons is still open. Further interest in malleable is noted. One Philadelphia buyer has taken 1,000 tons for forward shipment at about $15.65, delivered, another 500 tons for early delivery at about the same level and a third is out for 250 tons. An eastern steel works has practically closed for several thousand tons of standard low phosphorus iron, and other sales of this grade are reported on the basis of $19, Philadelphia.

We quote for prompt and second quarter shipment in Philadelphia and vicinity, as follows:

No. 1X foundry	$15.25 to 15.50
No. 2X foundry	15.00 to 15.25
No. 2 plain	14.50 to 15.00
Standard gray forge	14.00 to 14.25
Basic	14.50 to 14.75
No. 2X Virginia	15.30 to 15.50
No. 2 southern	14.75 to 15.00
Standard low phosphorus	19.00 to 19.25

Finished Material.—The volume of orders going to the rolling mills of eastern works is maintaining a greater pressure upon steel works capacity and the trend is toward larger production of primary material. In some cases, the steel output though increased by recent additions to active capacity, is still behind the mill requirements, and more open-hearth furnaces are on the verge of being ordered in. One eastern plate mill this week is up to an 85 per cent basis, an eastern shape maker ran in March at 90 per cent of the highest monthly output in its history, and the activities of other eastern plants are usually at from 70 to 75 per cent. The structural department of the Bethlehem Steel Co. is operating double turn and a drop of 75 cents to $1 a ton in coal prices is clearing up what otherwise promised to be an obstruction to increased mill operations.

Prices are reflecting the influence of the heavier operations. The Bethlehem Steel Co. is announcing its minimum schedule on standard shapes as 1.20c, Pittsburgh, or 1.35c, Philadelphia, but other eastern makers will still do 1.15c, Pittsburgh, and some similar reports are coming from other directions apart from the immediate Pittsburgh sellers who now seem to be holding firmly to the 1.20c base. Conditions in plates are not much different. Miscellaneous orders are going at 1.30c, Philadelphia, or 1.15c, Pittsburgh, but on contracts to July 1, which have been taken by eastern mills, 1.35c, Philadelphia was done. Steel bars are firm at 1.30c, Philadelphia, and bar iron is inclined to a minimum of 1.25c, Philadelphia. In billets, eastern makers have been so encouraged to put up forging billets $1 a ton to the basis of $25 to $26, Pittsburgh, or $27.40 to $28.40, Philadelphia, and to hold more stoutly to $20, Pittsburgh, or $22.40, Philadelphia, on rolling billets. Forging billets, however, have recently been sold here from the Pittsburgh district at $26.40, delivered, or $24, Pittsburgh.

Structural lettings are slow. The Vendig hotel and the addition to the Cramp ship plant are still pending. The D., L. & W. cut-off is still undecided. There has been some activity in tin plate in this district for export, and the Union Petroleum Co. has placed an order for 3,200 boxes.

More orders for motive power continue to come out, and the Baldwin Locomotive Works is increasing its operations. After having run five days a week for some time, it resumed, last week, a six-day schedule. This builder has just booked an order for 35 locomotives for the Atlantic Coast Line, and also a large order from the Great Northern railroad.

We quote, delivered in Philadelphia and vicinity, as follows:

Plain structural shapes, 1.30c to 1.35c; tank plates, 1.30c to 1.35c; steel bars, 1.25c; common bar iron, 1.22c to 1.27c; cut nails, 1.65c to 1.70c; blue annealed sheets, No. 10 gage, 1.50c to 1.55c; 4 x 4-inch open-hearth rolling billets, $22.40 to $23.40; forging billets,

$26.40 to $27.40. Extras shown under Pittsburgh report.

Old Material. — Steel scrap has shown a little flurry of excitement this week, and it has lead to increased holding of material accumulated for further advances. Financial embarassment of a leading dealer, added to the stir. Two eastern steel makers closed in the week for 4,000 to 6,000 tons of heavy melting steel at $12.50, delivered, advancing the market firmly to this level for first class material. Other tonnage is under negotiation, as consumers appear to be more seriously regarding their stock piles. Apart from steel scrap, the market has shown no particular movement, but is generally of good tone. The Pennsylvania railroad is closing this week on a list exceeding 20,000 tons, which is larger than usual.

We quote, delivered in eastern Pennsylvania and New Jersey consuming territory, as follows:

Old iron rails	$15.75 to 16.25
Old steel rails (rerolling)	13.00 to 13.50
No. 1 heavy melting steel	12.25 to 12.75
Old car wheels	12.50 to 13.00
Old iron axles	22.00 to 23.00
Old steel axles	17.00 to 17.50
No. 1 railroad wrought	14.50 to 15.00
Wrought pipe	12.00 to 12.50
Cast borings	9.00 to 9.50
Machine shop turnings	9.00 to 9.50
Heavy cast	13.00 to 13.50
Malleable	11.00 to 11.50
Stove plate	10.00 to 10.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

NEW YORK

Keen Competition Between Lake and Port Henry Ores

Office of THE IRON TRADE REVIEW, 1115 West Street Bldg., April 2.

Iron Ore.—Information has come out regarding several additional sales of lake ores to eastern consumers. Some of these have been of round tonnage, but the purchase of 100,000 tons of Mesabi non-Bessemer ore by a Schuylkill valley maker has probably been the largest sale of lake ores thus far made in the east. Lake miners have apparently made stronger efforts this year to secure a good part of "fix" ore requirements of eastern open-hearth plants. On some of the best known grades of this ore they have reduced their price more than $1 a ton, compared with 1911 official prices, but this has been met with corresponding reductions on eastern lump ores. There has been some additional selling this week of Port Henry ores to eastern furnaces.

Pig Iron.—Some of the larger eastern consumers evidently believe that the present market offers a favorable opportunity for extended forward purchase, notwithstanding the feeling with many consumers that reduced ore prices will bring lower iron quotations in the second half. A boiler manufacturer has bought 8,000 to 10,000 tons of No. 2 plain and No. 2X grades for New Jersey and Ohio plants, and has obtained deliveries running in some cases to the end of 1913. The prices made have ranged from $14.15 to $14.45, delivered, and all business was divided among southern, eastern and middle western sellers. The southern iron was taken on the basis of about $9.75, Birmingham, for No. 3. An eastern soil pipe maker has increased its recent purchases to 7,000 tons and is still negotiating for 2,000 to 3,000 tons, largely No. 2 plain. Another large eastern buyer has been quietly figuring on 10,000 to 15,000 tons of foundry grades. Large New England malleable consumers which were sounding the market on a block of 5,000 to 10,000 tons, have decided not to buy because of advances asked. There has been considerable buying among New Jersey foundries in lots of 1,000 tons and less at prices usually ranging from $14.75 to $15, delivered, for No. 2X, and about 3,000 tons of inquiry is pending there. The Virginia Iron, Coal & Coke Co. has re-entered the market in a limited way and is offering 1,000 to 2,000 tons monthly of 1½ to 2 per cent silicon at $12.50, furnace, and 3,000 tons monthly of 2 to 2½ silicon at $12.75, furnace, for second quarter shipment. Aggressive interests in Buffalo territory have sold No. 2X down to $13, furnace, though most sellers in that territory are considerably above this level and some of them have sold No. 2X at $14.25, furnace, for delivery into Canada, where some shortages have occurred from interrupted English shipments. The prospect for an early settlement of the coal labor controversy is making a threatened strike less of a factor in the iron market. The Pulaski furnace, in Virginia, has gone out on account of an accident.

We quote for prompt and second quarter shipment as follows, southern and Virginia iron being given at New York docks as follows:

Northern foundry No. 1	$15.20 to 15.45
No. 2 foundry	14.70 to 15.20
No. 2 plain	14.25 to 14.50
No. 2 Virginia	15.30 to 15.85
No. 2 southern foundry	14.50 to 14.75
Malleable	15.25 to 15.50
Gray forge	14.00 to 14.25

Ferro-Alloys. — Some fancy prices for carload lots of ferro-manganese continue to be paid but the recent arrival of 5,000 to 6,000 tons from England has relieved any pressing shortage among large consumers. Sales of small lots are noted at $50, $56 and even $60, seaboard. German ferro-manganese is being offered on forward contracts at $45 to $46, seaboard. Inquiry is light and does not exceed 1,000 tons. Other alloys show no particular movement. We quote 80 per cent standard English ferro-manganese at $41, seaboard, for sizeable lots, and 50 per cent ferro-silicon at from $68 to $70, Pittsburgh.

Cast Iron Pipe.—Though there continues a good interest among private buyers, public inquiries the last two weeks have been few. Several of the eastern shops are well booked on business and are asking higher prices but former low prices are still being made in some cases. We quote 6-inch pipe at from $21 to $22, f. o. b. New York, in carload lots.

Finished Material.—Improvement in prices appears to be now more surely coming to the finished material market. Shape and plate makers are more uniformly asking 1.20c, Pittsburgh, or 1.36c, New York, and while some sellers will still accept business under this level, there is a more general assortment of miscellaneous business being placed on this basis. The existence of many low priced contracts taken some time ago and now being specified against, overhangs the situation disturbingly, particularly in fabricated steel. The very low prices, however, that have characterized the fabricated market in the east seem to be disappearing along with the firmer condition of plain steel and genuine improvement in this respect

is reported from several directions. Steel bars are usually firm at 1.15c, Pittsburgh, or 1.31c, New York. Bar iron likewise shows more strength and some makers will not do as low as 1.25c, which was quite general until recently.

Railroad tonnage in structural lines is very moderate in the east. Fabricating interests which have recently canvassed the situation in the south found the steam lines there still debating upon their expenditures for steel works. The Atlantic Coast Line this week took bids on 1,600 tons of bridge work. The Baltimore & Ohio railroad has placed 500 tons for several bridges in Chicago and the Maine Central 200 tons, both with the American Bridge Co. The Wilmington & Southern Traction Co. has given a small bridge order to the Phoenix Bridge Works and the New York Central has placed five bridges, requiring about 200 tons, with independent shops.

Many small structural orders of miscellaneous variety are being offered. The American Bridge Co. this week booked an aggregate of 2,500 tons in business of the 50-ton and less class. The Boston Bridge Works has 750 tons for extensions to the New England Gas & Coke Co. plant, Everett, Mass.; the Noelke-Richards Co., 500 tons for the Dayton, O., postoffice. The A. E. Norton Co. has 1,200 tons for the Graff Realty Co. loft on West Twenty-fourth street and the Hinkle Iron Works, 900 tons for an apartment for the same company on Fifty-fourth street; though final action has not been taken, Milliken Bros., Inc., are credited with 1,000 tons for the Phillips-Jones factory on East 134th street, this city; the American Bridge Co. has 600 tons for a department store at Hartford, Conn., and the Virginia Bridge & Iron Works, 400 tons for buildings for the Southern Paper Co., at Moss Point, Miss. The Cambria Steel Co. is reported to have taken 1,200 tons for buildings for the Caldwell Lead Co., Caldwell, N. J.

A large volume of new work is accumulating in the metropolitan district, much of which is yet in the hands of architects. A considerable volume of new offerings, however, is now coming out. Plans have been filed with the city building department for the 26-story Biltmore hotel to be built by the New York Central and New Haven railroads on the block bounded by Madison and Vanderbilt avenues and Forty-third and Forty-fourth streets, at a cost of $4,500,000. The steel requirements will be in excess of 10,000 tons. Plans are out for a 20-story loft at Twenty-sixth street and Broadway for the Twenty-sixth Street & Broadway Co., 3,000 tons; for an addition to the Bossart hotel, Brooklyn, 1,200 tons; for a 12-story loft at Thirty-third street and Fifth avenue for the Thirty-third Street & Fifth Avenue Realty Co., about 1,000 tons; for the Zobell loft at Thirty-ninth street, about 1,000 tons. Bids are in for a warehouse in the Bronx for the H. J. Heinz Co., 800 to 1,000 tons. The Syracuse State Fair Association, Syracuse, N. Y., has plans out for cattle exhibition sheds, about 400 tons. Marc Eidlitz & Sons, the general contractors, have taken bids and are expected to settle this week the award of 1,000 tons for the Travelers' Insurance Co. building, Hartford, Conn. No decision has been made on the Stern Bros. store, 6,000 to 8,000 tons, upon which bids are entered.

The O'Rourke Engineering Construction Co. is the low bidder for section 2A of the Lexington Avenue subway, which will require about 1,600 tons of structural work. Wills & Marvin are the low bidders for the general contract for the power house for the Metropolitan Art Museum. We quote, delivered at New York tidewater, as follows:

Plain structural shapes 1.31c to 1.36c; tank plates, 1.31c to 1.36c; steel bars, 1.26c to 1.31c; common iron bars, 1.25c to 1.30c; plates and shapes from store, 1.70c to 1.80c; extras as shown under Pittsburgh report.

Rails and Track Material.—Orders are now developing from the inquiries from southwestern and western roads which have recently been before the rail mills. Some large matters, however, are still pending, including the 80,000 to 100,000 tons for the Harriman Lines. The Chicago, Milwaukee & St. Paul has placed 25,000 tons and the Chicago, St. Paul, Minneapolis and Omaha 11,000 tons with the Illinois Steel Co. The International, Great Northern & Texas road has closed for the Tennessee Coal, Iron & Railroad Co. for 12,000 tons of open-hearth rails. Two other orders for western and southwestern lines, aggregating about 50,000 tons, are understood to be closed but details are withheld. Inquiries for 6,000 tons for the New York, New Haven & Hartford railroad and 4,000 tons for the Interborough Rapid Transit Co. are still pending.

Old Material.—Holders of old material have grown more cautious in view of the better tone in the market and are less inclined to release their material in the expectation of higher prices. For that reason, the dealers are finding their opportunities for trading limited, and though higher prices are ruling in some grades, transactions are not numerous. One lot of heavy melting steel sold this week at $10.50, New York. The demand for grades other than steel shows little change. We quote, gross tons, prices dealers will pay at New York tidewater, as follows:

Old car wheels	$11.00 to 11.50
Old iron axles	16.00 to 16.50
Old steel shafting	13.75 to 14.25
No. 1 heavy melting steel	10.00 to 10.25
No. 1 R. R. wrought	12.50 to 12.75
Wrought pipe	9.25 to 9.50
Cast borings	6.00 to 6.50
Mach. shop turnings	6.75 to 7.00
Heavy cast	10.50 to 10.75
No. 1 machinery cast	11.00 to 11.25
R. R. malleable	9.25 to 9.75
Stove plate	8.00 to 8.50
Grate bars	6.50 to 6.75

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York.

BIRMINGHAM

Heavy Sales for Export Reported

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., April 2.

Pig Iron. — Specific information is furnished on the sale of 2,500 tons of Nos. 2 and 3 foundry, for delivery extending into the third quarter, and an aggregate of 5,000 to 6,000 tons of the same grades, in lots of 500 to 750 tons each, for shipment in the remainder of the first half. In addition to this, the sale of 40,000 tons of Nos. 2, 3 and 4 foundry, for export is accredited one of the large producers. This just mentioned cannot be confirmed through local offices, but in view of the tonnage for export that has been pending for some weeks, it is not unlikely that the sale has been made. The transactions of the week do not show a higher price than a basis of $10.50 per ton at Birmingham to have been received in any case; but, for the third quarter, a large concern has just advanced to a basis of $10.75 per ton at Birmingham, and to a basis of $11 per ton at Birmingham for strictly last quarter deliveries. With this exception, deliveries in the last quarter are not being offered, and in one or more cases, third quarter deliveries are offered with reluctance. Recent

specifications for delivery during this month show an increase in the rate of consumption when compared with that of March. The records for March show a very heavy tonnage comparatively to have been exported, while the demand from the regular trade was considered larger than the daily output all through the month. In view of this, stock returns are expected to show the market in a very satisfactory condition, when the aggregate accumulation is compared with the tonnage now on order books, and the rate of production. The small orders now pending are very attractive in the aggregate, and the requirement of a large pipe manufacturer, recently mentioned, is understood to be still before the trade. We quote for first half and third quarter:

No. 1 foundry	$10.75 to 11.25
No. 2 foundry	10.25 to 10.75
No. 3 foundry	9.75 to 10.25
No. 4 foundry	9.25 to 9.75
Gray forge	9.50 to 9.75
Mottled	9.25 to 9.50
Standard basic	10.25 to 10.75
Off basic	10.00 to 10.50
Standard charcoal	22.50 to 23.00

These prices are per gross ton f. o. b. cars at Birmingham district furnaces.

ST. LOUIS

Pig Iron Market Has Better Tone

Office of THE IRON TRADE REVIEW, St. Louis, April 2.

Pig Iron.—The market presents a decidedly better tone in the St. Louis territory. Several large interests are quoting a minimum price of $10.50, Birmingham, for second quarter delivery, and assert that some business has been done at $10.75 for No. 2. One of the large companies in St. Louis is asking for prices on malleable delivered, which may result in a sale of from 2,000 to 3,000 tons. Another concern is in the market for 300 tons of southern and 100 tons of northern iron for delivery over the second and third quarter. A sale of 500 tons of malleable and another of 500 tons of Lake Superior charcoal car wheel iron were made Saturday. Northern iron is firm at $13 to $13.50. Ironton, with a tendency toward an increased price. Our quotations on southern iron, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$14.75
Southern No. 2	14.25
Southern No. 3	13.75
Southern No. 4	13.25

Coke.—Inquiry for coke is active, and quite a number of orders have resulted. Consumers have been so persistent for shipments that in some instances they have merely written or wired "send us some coke." The orders have been for small tonnages, however, but the feeling is decidedly better.

Our tabulated prices remain as follows:

We quote 72-hour Connellsville foundry grades, $2.50 to $2.65 for second quarter of 1912; 72-hour foundry, $2.25 to $2.50 on tracks and $2.75 to $2.85 for immediate delivery; 48-hour Connellsville furnace, $2 to $2.25; best 72-hour Virginia foundry, $2.50 to $2.75; 48-hour Virginia furnace, $2 to $2.25. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material. — Specifications have been quite heavy against existing contracts. The bar market is firm at 1.15c, Pittsburgh basis, or 1.47½c, St. Louis, for car lot shipments. Structural material and plates are firm at 1.20c, Pittsburgh, or 1.42½c, St. Louis. Iron bars are firm at 1.20c, St. Louis, in car lots. The contract for structural material to be used in the Monward building, the erection of which now seems to be a certainty, is believed to have virtually been let to James Stewart & Co. From 3,000 to 4,000 tons will be used. The height of the building has been cut from 21 to 18 stories.

Old Material.—Prices on scrap iron have risen about 25 cents around. The market is firm, and while no sale of consequence has been reported, the feeling seems to be much better. Our prices follow:

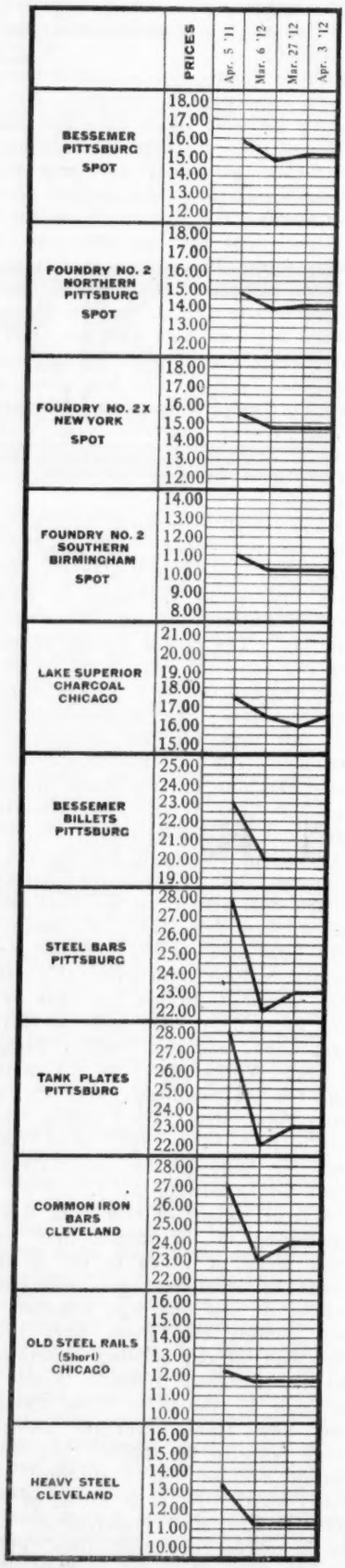
Gross Tons

Old car wheels	$13.25 to 13.75
Old iron rails	14.75 to 15.25
Re-rolling rails (5 ft. and over)	12.75 to 13.25
Old steel rails (3 ft. and under)	12.00 to 13.00
Light section relayers (45 lb. and under) subject to inspec.	21.25 to 22.25
Re-laying rails, subject to inspec.	22.25 to 22.75
Frogs, switches and guards	10.25 to 10.75
Heavy melting steel	11.25 to 11.75
Shoveling steel	10.50 to 11.00

Net Tons

No. 1 railroad wrought	$11.25 to 11.75
No. 2 railroad wrought	10.25 to 10.75
Arch bars and transoms	13.75 to 14.25
Knuckles, couplers and springs	10.25 to 10.75
Shafting	13.75 to 14.25
Iron car axles	18.25 to 18.75
Steel car axles	15.75 to 16.25
Locomotive tires	11.25 to 11.75
No. 1 country wrought	9.00 to 9.50
Pipe and flues	8.25 to 8.75
Tank iron and cut boilers	7.25 to 7.75
No. 1 cut busheling	9.00 to 9.50
No. 2 cut busheling	6.50 to 7.00
Cast and mixed borings	6.00 to 6.25
Machine shop turnings	6.75 to 7.00
Railroad malleable	10.25 to 10.75
Agricultural, malleable	9.25 to 9.75
Stove plates	9.25 to 9.75
Angle splice bars (iron)	11.00 to 11.75
Angle splice bars (steel)	9.25 to 9.75

PRICE CHART



METAL MARKETS

Strength of Tin Prices Explained

New York

April 2.

Tin.—The statistics for March were published Monday, and explained the great strength that tin prices have displayed recently, in face of the unfavorable labor situation abroad. Although the sale of about 2,700 tons of Banca tin occurred during the month, visible stocks increased only 698 tons. This shows that consumption the world over was better than normal. Deliveries into consumption proved that English manufacturers did not suffer seriously from the coal strike. London deliveries in March were 1,666 tons, compared with 1,496 tons in February and 1,445 tons in January. Deliveries in the United States were 4,000 tons last month. The domestic demand has been good, and the local market for nearby contracts has ranged slightly above the foreign spot standard market. Spot and April tin is held at 43.37½c today, and standard tin closed in London at £196 10s for spot, and £192 5s for three months. Arrivals since April 1 are 1,220 tons and there are 2,775 tons afloat.

Copper.—Today 16c copper, which has been so long predicted, became a fact. Sales of electrolytic have been made at that level for delivery in the valley, and business for export has also been closed on that basis. There is a good demand from both foreign and home consumers, though it is not what might be called large. The important sellers regard the latter feature as fortunate with the present scarcity of stocks. It is feared that should a heavy buying movement develop the price would advance to a harmful figure. Lake copper is 16c, and casting is 15.62½c. Exports since April 1 are 1,627 tons. The exports during March aggregated 26,764 tons.

Lead.—The American Smelting & Refining Co. is the lowest seller of lead, at 4.20c in New York. Independents, however, are doing a fair amount of business at from 10 to 15 points above that level. The latter are quoting prompt shipments at 4.37½c in New York.

Spelter.—Prompt spelter and deliveries up to June are held at 6.65c in New York, with demand about normal. On the metal exchange, Monday, 50,000 pounds May sold at 6.30c; 50,000 pounds June at 6.15c, and 50,000 pounds July at 6c, f. o. b. East St. Louis.

Antimony.—Market is unchanged. Demand is light and prices firm. Cookson's is 8c; Hallett's is 7.75c, and Hungarian is 7c.

Chicago

April 1.

New Metals.—Copper continues to go up and is now quoted 15¾c, Chicago. Business is active. Spelter is unchanged, but lead is showing considerable strength and advanced $1 a ton during the week.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 15¾c; casting, 15¼c; smaller lots, ¼c to ¼c higher. Spelter, car lots, 6.55c; lead, desilverized, 4.25c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, 8.65c, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 43¾c. Cookson's antimony, 8½c; other grades, 7½c to 8c.

Old Metals.—The large buying movement in the primary copper market has improved sentiment in the old metal market in the west and quotations have been marked up. The demand has not centered on any special items.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, crucible shapes, 13¾c; copper bottoms, 12¾c; heavy cut crucible copper, 13¾c; heavy red brass, 11¾c; heavy yellow brass, 9¾c; No. 1 red brass borings, 10c; No. 1 yellow brass borings, 8½c; brass clippings, 9c; lead pipe, 3½c; zinc scrap, 4¾c; scrap aluminum, 12½c; tea lead, 3¾c; No. 1 pewter, 28c; block tin pipe, 39c; tin foil, 35c; linotype dross, 3¼c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc dross, $90 a ton.

St. Louis

April 1.

Lead and Zinc.—Choice lots of zinc blende brought a top price of $55 a ton in the Missouri-Kansas-Oklahoma district last week, the base price for 60 per cent qualities being as high as $52 a ton, ranging down to $48. The price showed a tendency to decline at the beginning of the week, but strengthened toward the close.

Calamine productions were cut to the minimum, with 40 per cent grades selling for $22 to $24 a ton. Choice lots sold as high as $30 a ton.

Lead ore was stronger at $52 to $57 a ton.

NEAR RECORD

Were Iron and Steel Exports in February—Decrease in Imports.

Iron and steel exports in February were close to the largest on record. The value of all iron and steel exports, tonnage and non-tonnage, was $21,801,570, about 4 per cent in excess of the monthly average in 1911, and an amount exceeded in only three months in the history of the export movement.

The total weight of all the tonnage lines exported in February was 204,972 gross tons, a gain of 36 per cent over the preceding month, and of 13 per cent over the monthly average of 1911, in which year the total exceeded that of any previous year by 42 per cent.

Imports Reflect Strike.

The imports of iron and steel in February amounted to 11,622 gross tons, this being 42 per cent less than in January and 46 per cent less than the average of last year. Pig iron imports in February were only 5,553 tons, against an average of 10,360 tons per month during the seven preceding months. The very light imports are presumably chargeable mainly to the coal strike in England.

Considering Market Conditions

Pittsburgh, April 3. (By wire.)—Independent steel manufacturers are holding a conference today in Pittsburgh to discuss market conditions and the meeting will probably last two days. No announcement was made as to the results of the conference. It is presumed that they are trying to get a better line on price conditions.

MacVeagh Will Discuss the Tariff

Hon. Franklin MacVeagh, secretary of the treasury, will deliver an address at the banquet of the National Metal Trades Association in New York, April 11. It is understood that Secretary MacVeagh will discuss the tariff in a very interesting way, and will favor putting consideration of tariff changes on a much higher plane.

PREPARING TO QUIT

Stanley Not Allowed to Prolong Sessions of House Committee.

Washington, April 2.—At a heated executive session of the Stanley committee today, which lasted three hours, it was decided to close the investigation of the United States Steel Corporation, after four more witnesses have been heard.

These witnesses are James Gayley, a director of the United States Steel Corporation; Don H. Bacon, formerly president of the Tennessee Coal & Iron Co.; Joseph Sellwood and Thomas F. Cole, formerly of Duluth. They are all experts. No time has yet been fixed for their appearance, and after they are heard, the committee will begin the preparation of its report.

At the conclusion of the executive session Chairman Stanley made public the following resolution, which had been adopted:

"Resolved that the committee closes the hearing with the exception that four witnesses are authorized to be called to complete the evidence on the 'ore situation'." The witnesses are then named.

Chairman Stanley desired to summon J. Pierpont Morgan, but as he is abroad, he cannot be reached by subpoena, and this plan was abandoned. He was also anxious to call other witnesses and to prolong the investigation, but the other members of the committee would not agree to this proposition, taking the ground that the investigation has dragged along unduly, and that no benefit would result from its continuance. There was much acrimonious discussion during the meeting and at its adjournment Chairman Stanley was crestfallen and in a very bad humor. He would not talk except to say that the calling of the four witnesses will not delay the report of the committee, and that their appearance was subject to his call.

Chairman Stanley enjoys the publicity he has secured by reason of this investigation, and was loth to bring the inquiry to an end. About the only result of the investigation will be to almost certainly assure the reelection of Stanley. "Going after the trusts" is particularly popular in his district, and many of the questions propounded by him clearly indicated that they were framed for political purposes.

Just when the report and recommendations of the committee will be completed is problematical. Stanley says it will be finished May 1, but his colleagues do not agree with him. There is an enormous mass of evidence to be considered, and nothing whatever has yet been done in the direction of classifying it. After this is done, much time will be spent in considering the evidence under the various heads. Such members of the committee as Representative Gardner and Representative Young (Republicans), who have endeavored to confine the investigation within legitimate limits; to eliminate politics; and have objected to asking the witnesses hypothetical questions and putting statements in the mouths of witnesses, believe the report cannot possibly be completed before June 1. It may be later, they say. If their judgments are correct, there will be no results from the investigation so far as concerns legislation at this session, as Congress will probably adjourn early in June to enable the legislators to attend the national conventions.

If, however, the Democratic leaders of the house, decide to make more political capital and campaign material out of the investigation, the report may be hurried, and a measure put through the house.

Two measures proposed by Representative Stanley to supplement the Sherman anti-trust law are:

First, a bill to forbid corporations to own or operate railroads, and second, a bill which will forbid the formation of holding companies, thereby making it impossible for one corporation to acquire stock of subsidiary corporations and to control those companies.

No decision has been reached as to whether efforts will be made by the House leaders to enact further anti-trust legislation.

Inquiry among the leaders of the senate discloses that there is no disposition on the part of that body to adopt any hasty and ill considered legislation aimed at the corporations, and it is the judgment of such men as Senator Cullom and Senator Lodge that any anti-corporation measure adopted by the House will not be considered at this session by the Senate.

To Elect Steel Directors

The annual meeting of the stockholders of the United States Steel Corporation will be held at Hoboken, N. J., Monday, April 15, for the consideration of various matters of business, including the election of eight directors for a term of three years.

Mabel McWane furnace of the Anniston Iron Corporation, Anniston, Ala., was blown out March 16.

LARGEST EARNINGS

Made by Bethlehem Steel Co. in Its History.

During the calendar year of 1911, the Bethlehem Steel Co. earned from operations before making allowances for interest charges and depreciation, the sum of $4,579,565, which was the largest figure realized for any year in the history of the company. This was an increase of $235,763 over 1910, when $4,343,862 was earned. There was carried to surplus from the 1911 operations $2,038,978, compared with $2,001,612 in 1910.

The income account for the year ended Dec. 31, 1911, is as follows:

Total net earnings	$4,579,565.16
Interest charges	1,865,586.19
Depreciation and renewals	675,000.00
	$2,540,586.19
Surplus	$2,038,978.97
Surplus January 1, 1911	5,269,687.89
Surplus Dec. 31, 1911	$7,308,666.86

Note.—During the year there was charged to cost of operations for ordinary and extraordinary repairs and maintenance and for provisions for exploitation and exhaustion of mines, amortization of patents, etc., $2,850,237.87, but this appears in the profit and loss account above, only in so far as material on which work was done during the year was shipped.

President C. M. Schwab sums up the year's conditions in his report to the stockholders, as follows:

The latter part of the calender year just ended was a period of most unsatisfactory business conditions in the iron and steel market, the volume of sales being small and prices abnormally low. The earnings of your corporation, however, were somewhat in excess of those for 1910, being (prior to deduction of interest charges, etc.,) $4,579,565.16, the largest since its incorporation.

The increased plant provided by the capital expenditures of the last few years has not as yet, on account of unfavorable market conditions, been operated to its maximum output; and this, together with the low prices prevailing, has prevented this increased earning capacity from contributing in any adequate measure to the actual earnings of your corporation.

The situation of the Bethlehem plant has been greatly strengthened during the past year. Its sources of supply of raw materials have been protected by very favorable long-term contracts without the necessity of capital investment. Large improvements and additions have been made in operating efficiency and economies, and the general conditions pertaining to plant and its organization have been brought to a high standard.

To a greater degree now than at any time in the history of the steel industry it has become necessary for those plants which are to retain their respective territorial or trade positions to effect every operating economy possible by improved and additional plant equipment, and to extend their business along lines natural to their location or facilities. This may require the entrance of your corporation into fields of activity not heretofore contemplated.

REPORT IS MADE

By the Southern Iron & Steel Co. for Year Ended Dec. 31.

The balance sheet of the Southern Iron & Steel Co., as of Dec. 31, last, shows total working assets of $1,309,530; working liabilities, $809,562; cash on hand, $22,626; inventories, $942,953, and total assets and liabilities of $26,890,014. The $688,027 deficit for the year was on account of $453,401 accrued interest, while there was a loss on all operations including the Georgia company of $234,000. The report says:

"While it may be that the operation of these properties on a material advance in the price of pig iron, would show profits justifying a valuation of $592,000, the uncertainty of such advance and consequent profit did not seem to warrant the company in depleting its working capital to the extent required to pay the interest and preserve said properties. Default has therefore been made in the payment of such interest, and the trustee of the mortgage securing the bonds has commenced foreclosure proceedings.

"The action of the company in permitting defaults to be made on the bonds of the Georgia Steel Co. and the Chattanooga Iron & Coal Co., met with the approval of the re-organization committee."

Coke Workers' Wages Advanced

The H. C. Frick Coke Co. posted notices at all their mines and ovens on Monday morning notifying about 20,000 coke workers of an advance in their pay of 7½ per cent. The company in the past has always paid a little bit above the ruling rate of the Connellsville region, although there is no organization among the employes.

Since the announcement has been made by the Frick company, practically all coke operators have followed the advance with an equal one.

To Underwrite Assessments

James N. Wallace and Alexander J. Hemphill have formed a syndicate to underwrite the assessments of $5,192,000 on the preferred and common stocks of the Allis Chalmers Co., which are a part of the reorganization plan and have agreed to act as syndicate managers. Mr. Hemphill has been chairman of the common stockholders' protective committee.

Must Buy in Canada.—The Canadian government will hereafter require all materials used for railways subsidized by parliament to be purchased in Canada, says our Toronto correspondent. An understanding to that effect at present exists, but complaints have been made that it is frequently disregarded, especially in the west. A specific clause providing for the purchase of all material in Canada will in future be inserted in all subsidiary contracts.

CONTROL ELYRIA PLANT

Elyria Iron & Steel Co. Changes Ownership Recently.

A controlling interest in the Elyria Iron & Steel Co., Elyria, O., has been purchased by the Realty Guarantee & Trust Co., of Youngstown, O. Some changes will follow in the directorate, but the management will remain as in the past, with the exception of W. S. Miller, who retires as president. Hugh B. Wick is vice president and treasurer. Mr. Wick and his father, Henry Wick, of Youngstown, have been interested in the Elyria company for nine years, the former being actively identified with the management in all that time. The company has a capital stock of $500,000 and manufactures railroad tie plates and spikes, high-carbon steel tubing and agricultural shapes, having an annual capacity of 50,000 tons.

Philadelphia Erectors Declare for Open Shop

The Erectors Association of Philadelphia, which is a branch of the National Erectors Association, has been organized by a number of iron and steel erectors operating in that city and vicinity. The officers are P. R. Foley, Eastern Steel Co., president; O. F. Nass, vice president, and John I. Bland, of John I. Bland & Co., secretary and treasurer. The other members are Geo. F. Pawling & Co., Harry F. Hare and Peter Halscher. The association states its object to be "the institution and maintenance of the open shop principle in the employment of labor in the erection of steel and iron bridges, buildings and other structural steel and iron and ornamental and miscellaneous steel and iron work."

Made a Record

The New Castle plant of the Carnegie Steel Co. during the week ending March 23, produced 16,271 tons of ingots, and 14,093 tons of sheet bars. This is the highest record made by that plant, comparing with the next highest record in January, 1906, when the same works produced 15,552 tons of ingots and 13,678 tons of sheet bars.

RAIL PRODUCTION LESS

In 1911, a Decrease of Over 22.3 Per Cent Being Made.

The production of all kinds of rails in the United States in 1911 amounted to 2,822,790 tons, against 3,636,031 in 1910, a decrease of 813,241 tons, or over 22.3 per cent, says the *Bulletin* of the American Iron and Steel Association. Included in the total for 1911 are 205,409 tons of girder and high T steel rails for electric and street railways. The maximum production of all kinds of rails was reached in 1906, when 3,977,887 tons were rolled.

There were 7,234 tons of miscellaneous rails rolled in 1911, of which 234 tons are iron rails, 462 tons of rails rolled from an electric steel, and 6,538 tons of re-rolled steel rails, which the makers were unable to classify as Bessemer or open-hearth rails. The production of Bessemer steel rails in 1911 amounted to 1,138,633 tons, against 1,884,442 tons in 1910, a decrease of 745,809 tons, or over 39.5 per cent. The production of open-hearth steel rails in 1911 was 1,676,923 tons, against 1,751,359 tons in 1910, a decrease of 74,436 tons, or over 4.2 per cent.

Scrap Merchants Ask for Credit Extension

Emanuel Dreifus & Co., Arcade building, Philadelphia, prominent iron and steel merchants, have asked their creditors for an extension, and a committee of the largest creditors consisting of W. Vernor Phillips, of the Perry, Buxton, Dean Co., G. H. Leaf, of the E. B. Leaf Co., and F. B. Snyder, assistant cashier of the First National Bank, Philadelphia, has been named to go over the books, appraise the assets and recommend the future action to be taken. According to the company, the assets and bills receivable exceed the liabilities by about $260,000. The liabilities are given at about $500,000. Emanuel Dreifus & Co. have been especially prominent in the eastern scrap market, and acted as the syndicate manager for the eastern steel mills under the co-operative plan of buying, which was followed up to a year or two ago.

To Make Tin Plate

Articles of incorporation of the Waynesburg Tin Plate Co., Waynesburg, Pa., have been filed in Dover, Del. This is the company that is operating the old Waynesburg Forge Sheet & Tin Plate plant. J. W. Closser, C. L. Cochran and W. R. Hawkins are the incorporators. The capital of the company is $100,000.

Largest Pig Iron Production Since April 1910

Output in March Exceeded That of February by 312,954—
Steel Works Made Practically All the Gain in Production

The largest total output of coke and anthracite pig iron was made by the various stacks throughout the country in March for any month since April, 1910. The March total was 2,411,750 tons, compared with a total of 2,098,796 tons in February, a gain in March of 312,954 tons, although it must be remembered that February had two less working days than did March. The daily average production in March was 77,798 tons, compared with 72,372 tons in February, a gain in March of 5,426 tons.

AVERAGE DAILY PRODUCTION.

	1912.	1911.
January	66,220	58,989
February	72,372	63,617
March	77,798	69,863
April	.....	68,163
May	.....	60.367
June	.....	59,109
July	.....	57,294
August	.....	61,995
September	.....	65,797
October	.....	67,486
November	.....	66,637
December	.....	65,558

Practically all the gain in production in March was made by the non-merchant or steel works stacks. The merchant furnaces in March produced 563,076 tons, compared with 562,101 tons in February, a gain in March of only 975 tons. The steel works furnaces in March made 1,834,218 tons, and in February they made 1,517,868 tons. This showed a gain in the non-merchant output in March of 316,350 tons.

These figures are borne out by analysis of the statistics of stacks blown in and out during the month. The active stacks at the end of February were 235, while in March they were 237, a net gain of two in March. Of the merchant stacks, six blew out in March and three were relighted, making a net loss from the active list of three. Non-merchant stacks to the number of eight were relighted in March, while three blew out, making a net gain of five to the active list. In all, during March 11 stacks were relighted and nine blew out.

MONTHLY PRODUCTION.

	1912.	1911.	1910
January	2,052,806	1,766.658	2,599,995
February	2,098,796	1,781,285	2,429,525
March	2,411,750	2,165.764	2,588,736
April	.....	2,044,904	2,477,730
May	.....	1,871,388	2,374,802
June	.....	1,773.282	2,288,279
July	.....	1,776,108	2,158,124
August	.....	1,921,832	2,103,792
September	.....	1,973,918	2,048.461
October	.....	2,092,061	2,086,205
November	.....	1.999,100	1,910,385
December	.....	2,032.301	1,779,899
Total	6,563,352	23,198,601	26,845,904

The output of spiegel in March was 3,823 tons, compared with 2,915 tons in February, a gain of 908 tons in March. The production of ferro in March was 10,632 tons, compared with 15,912 tons in February, making a loss in March output of 5,280 tons.

Blast Furnace Notes

The Colorado Fuel & Iron Co. applied the torch to its "E" stack on March 9; "F" stack was retired on March 13.

South Works stack No. 5 and Joliet stack No. 4 of the Illinois Steel Co. were blown in on March 27.

States.	No. of stacks.	No. in blast last day of month. Mar.	Feb.	Total tonnage made. Merchant.	Non-Merchant.	Totals. Mar.	Feb.
Pennsylvania	156	100	98	156,154	883,261	1,039,415	907 189
Ohio	71	52	51	126,283	464,042	590,325	510,960
Alabama	45	18	18	107,967	41,964	149,931	138,106
Virginia	24	5	7	20.365	.....	20,365	25,978
New York	28	15	14	63,548	85,780	149,328	117,323
New Jersey	7	..	..	.....	.....	.....	.....
Illinois	24	18	16	21,173	188,013	209,186	154,278
Colorado	6	3	3				
Indiana	9	8	8				
Maryland	4	2	3				
Wisconsin	6	4	4	26,295	147,537	173,832	160 669
Kentucky	7	1	1				
West Virginia	4	3	3				
Tennessee	18	7	7				
Washington	1	.	.	31.253	23,621	54,874	54,240
Georgia	2	.	.				
Texas	3	.	.				
Minnesota	1	.	.				
Michigan	3	1	2				
Missouri	1	.	.	10,038	.....	10,038	11,226
Spiegel—All states						3,823	2,915
Ferro—All states..						10,633	15,912
Totals	420	237	235	563,076	1,834,218	2,411,750	2,098,796

Discussed Safety of Employes

The monthly meeting of the Pittsburgh Foundrymen's Association, held on Monday of this week, was not only an unusually interesting gathering of the foundry trade, but the address presented by W. H. Cameron, of the American Steel Foundries, on "Safety Appliances for Foundries," proved of unusual interest, as demonstrating what was possible to do for increasing safety among foundry employes. Following this address, W. O. Renkin, who was in charge of the construction work of the Tata Iron & Steel Co.'s works, in India, made a brief address to the association describing some of the experiences in this work now completed. The meeting followed a very pleasant luncheon at the Fort Pitt hotel, and the attendance was one of the best of the present season.

Want All to Know

Milwaukee, April 3. (By wire.)—Manufacturers of Milwaukee want the world to know that the citizens repudiated Socialism Tuesday by an overwhelming majority. It was a great triumph for sane ideas. Democrats and Republicans are rejoicing.

Still Buying Scrap

New York, April 3. (By wire.)—The United States Steel Corporation has made additional purchases of steel scrap in the Chicago territory amounting to about 5,000 tons.

Republic Ore.—The appearance of an ore analyses book, issued by the Republic Iron & Steel Co., has caused some inquiry as to whether this means a change of policy on the part of the Republic company. It does not except that the ore heretofore sold for the Republic by a Cleveland agency will hereafter be sold by the company direct.

The Rockdale, Tenn., stack of the Rockdale Iron Co. was blown in on March 1.

The Allegheny Ore & Iron Co. relighted its Iron Gate, Va., or Allegheny stack on March 19.

A Large Rerolling Mill of Unusual Design

A Detailed Description of the Laclede Steel Co.'s New Mill for Rerolling Rails and Billets

A new mill designed to re-roll rails into bars and shapes for agricultural implement makers, bedstead manufacturers, concrete reinforcement and other purposes, has recently been completed and placed in operation by the Laclede Steel Co., St. Louis. The plant is at Madison on the Illinois side of the river. It is the twelfth plant of this character to be built in North America during the past 20 years and represents a great step in advance over the original installations. The layout of the Laclede mill is very different from its predecessors and is of unusual interest.

The first re-rolling mill, designed primarily to handle rails, was built at Chicago in 1873 and removed to Chicago Heights in 1893 by the Chicago Steel Works, at which point it is now operated by the Inland Steel Co. Since that time other plants have been erected in Pennsylvania, New York, Ohio, Illinois, Canada and on the Pacific coast, which gives some idea of the growth and widespread character of this industry.

The new plant of the Laclede Steel Co. has a monthly capacity of 4,000 tons of bars, rods and shapes; these will be rolled exclusively from old rails, although the mill could be used to roll new steel from billets if desired. St. Louis is a large center for the production and distribution of railroad and other kinds of scrap, most of which at present is shipped to mills in the north and east for reworking and the new plant will form an outlet for much of this material. As there is but one other mill in or near St. Louis in this line, it is believed that the field for supplying agricultural implement makers, builders and others with hard steel is sufficiently large to warrant the construction of a new mill in the St. Louis territory. The plant will also have the entire south and southwest as its natural sales territory. In building the mill no expense has been spared to produce a plant which will turn out a good product at the least possible cost and a great deal of apparatus has been installed to avoid human labor. The mill has been designed and equipped with the same care and thought that would be given to an important steel plant of large dimensions. It is not a general scrap mill, but is designed expressly to rework steel rails or billets.

Features of Existing Plants

Before taking up in detail the description of the Laclede mill, it will be interesting to review the general features of the older plants of this class. In these the heating furnaces take the rails in 15-foot lengths and are fired either by coal or oil. The rolls in most of the older mills consist of eight stands placed in a single row and driven by two engines, one on each end. The slitting rolls, which are three-high, are in the center of the train; the flange is cut off in the first pass and the head separated from the web in the second. Three of the finishing stands are used for working up the flange and four for rolling the head and web. Some of the mills have hot beds and overhead traveling cranes, while in others the bars are delivered into simple troughs from which they are removed by hand.

The general layout of the Laclede mill is shown in Fig. 2, from which it may be seen that the heating furnace takes full-length rails, discharging them onto an approach table leading to the slitting rolls. The head and flange are separated from the web in one pass, the three pieces traveling forward to the breakdown rolls, which are direct-connected to the engine. Leaving this train, the webs of the rails are finished in a 10-inch motor-driven mill consisting of four stands, three of which are three-high and one two-high. Six additional finishing stands are provided for completing the operations on the head and flange. The finished bars run out through pinch rolls onto three long hot beds, as indicated in Fig. 2. Shears and straightening rolls are placed at the runout ends of the hot beds and ample space has been allowed for assembling material and loading, in which work the traveling

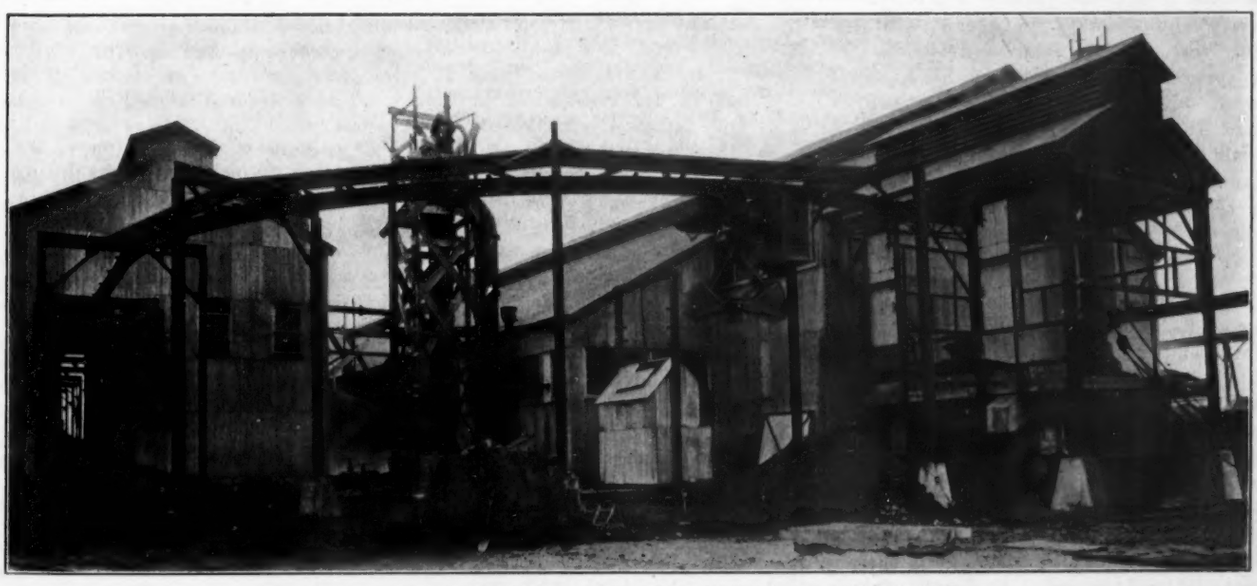


FIG. 1—GAS PRODUCERS AND COAL-HANDLING EQUIPMENT

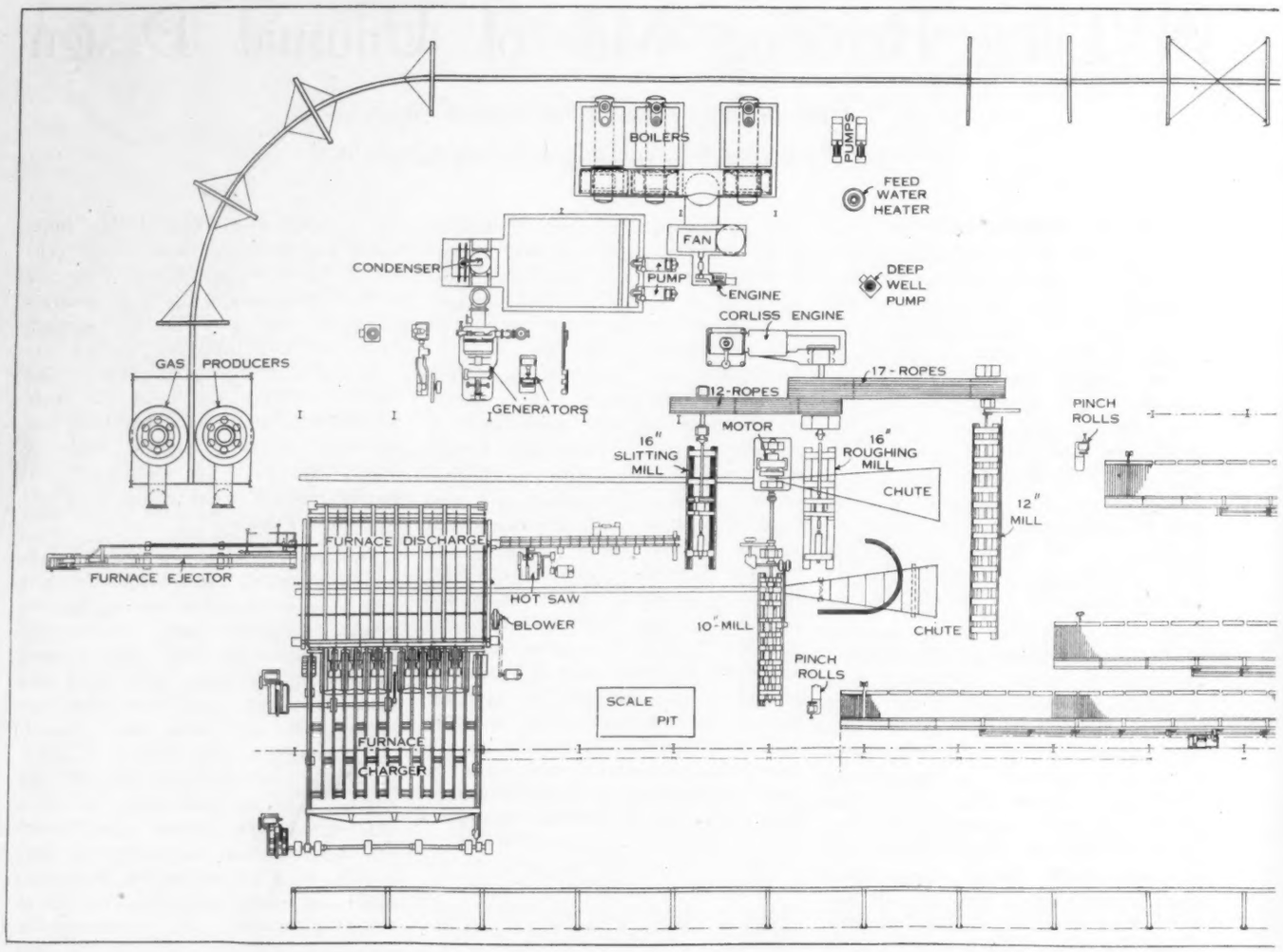


FIG. 2—GENERAL LAYOUT OF THE LACLEDE

crane will be used to advantage. The raw material is stored in a yard at one side of the building, where it may be picked up by the traveling yard crane and placed on the table of the furnace charger. Producer gas is used to heat the furnace. The auxiliary equipment is in keeping with the rest of the plant and includes a mono-rail hoist for handling coal, water tube boilers, a mixed-flow turbine to utilize the exhaust from the main engine, together with condensing apparatus, deep well pumps and a completely equipped machine shop.

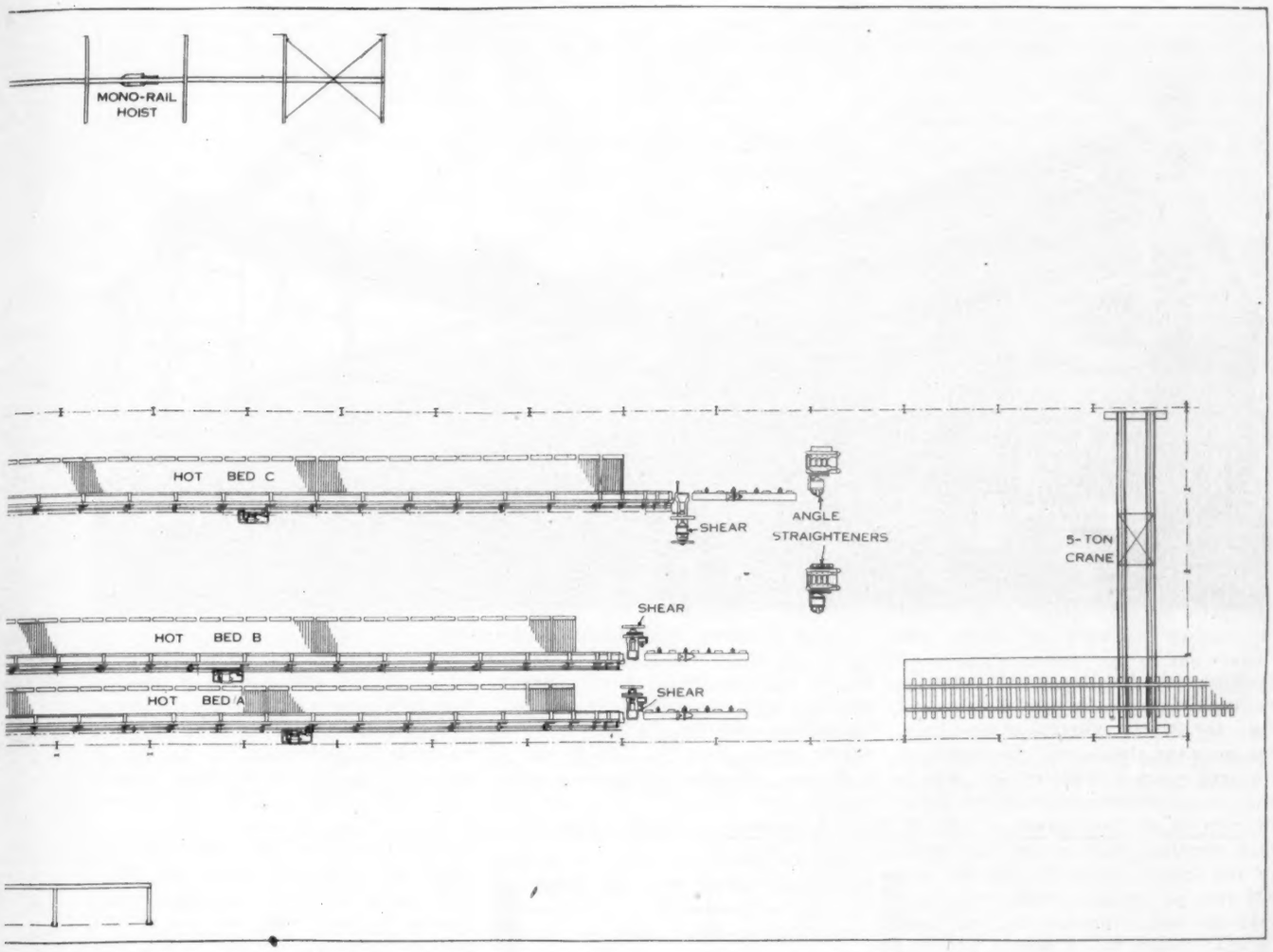
Layout of the Plant

The plant occupies a large tract of ground which is almost perfectly level and is so situated that it may be extended practically indefinitely without crowding. The main building is a steel frame structure of the usual type, 460 feet in length and 60 feet in width. It was erected by the McClintic-Marshall Construction Co. The yard on the south side of the buildings is used for the storage of raw material and in order to handle the rails rapidly and economically a Northern, 5-ton traveling yard crane with a span of 65 feet and a runway 240 feet in length has been provided. As indicated in Fig. 2, and illustrated in Fig. 3, the table of the furnace charger extends out under the crane runway. The charger is built from the standard designs of the United Engineering & Foundry Co. and presents no unusual features. It is operated by two electric motors. The furnace, as suggested above, is designed to take rails 33 feet long. It is provided with a motor-driven ejector, the ram of which is attached to a buggy operated by a wire rope. The blast is provided by a No. 6 motor-driven Sturtevant pressure blower. Gas is furnished to the furnace by two Morgan, 10-foot mechanical producers fitted with George automatic feed. The producers, which are located just beyond the end of the mill building near the furnace, as indicated in Fig. 2, are shown in some detail in Fig. 1. Coal bins are built over the producers and are filled by a grab bucket suspended from the mono-rail hoist.

The heated rails are discharged from the furnace onto an approach table, 38 feet, 6 inches in length, containing 19 motor-driven live rollers. A motor-driven hot saw is situated near the initial end of this table and is used either to cut the rails into shorter lengths, if this should be desirable, or to saw out and remove any bad spots.

Two-High Slitting Mill

The approach table delivers the rails to the 16-inch, two-high slitting mill, which is driven through a rope drive by the main engine, as indicated in Fig. 2. This mill consists of a single stand of pinions coupled to a stand of two-high slitting rolls which separate the head, web and flange in one operation. Upon leaving the slitter the various portions of the rail proceed on a table to the roughing mill immediately following. This mill comprises one stand of 16-inch, two-high roughing rolls, together with the necessary pinions, directly connected to the main engine. The distance between the center lines of the slitting and roughing mills is 25 feet and the two trains act prac-



STEEL CO.'S REROLLING MILL

tically as a continuous mill. The distance from the final roller in the approach table to the center of the slitting mill is 4 feet, 2 inches and that from the center of the roughing mill to the circular guide for the webs is 10 feet.

After leaving the roughing rolls the webs enter a circular trough, 14 feet, 2 inches in diameter, which guides them to the first pass of the 10-inch web finishing mill. The center line of this pass is 14 feet, 2 inches from the center line of furnace discharge. This mill consists of three, three-high, 10-inch stands and one two-high finishing train, together with a stand of pinions. It is direct-connected to a 350-horsepower, 240-350 revolutions per minute variable speed, General Electric, 230-volt, direct current motor. Fig. 2 shows clearly the arrangement of the motor and the mill.

The heads and flanges are finished in a 12-inch mill, which consists of four three-high and two two-high stands, together with a stand of pinions. The three stands on the outer end are used for finishing the heads and the other three for rolling the flanges of the rails. In order to prevent the partly rolled material from interfering with the mills in the rear, two chutes are erected behind the 12-inch mill, as shown in Fig. 2. The center line of this mill is 35 feet from the center line of the roughing mill. The middle of the train coincides with the center line of furnace discharge and the two-high finishing stands are set 16 feet, 6¾ inches to either side, being, therefore, 33 feet, 1½ inches apart. The 12-inch mill is driven by the main engine through a rope gear similar to that employed for the slitting mill. The mills and tables were designed and built by the United Engineering & Foundry Co., Pittsburgh.

Engine and Rope Drive

The main engine is a 34 x 48-inch, high-pressure, Southwark Corliss, with a 12-inch steam inlet and a 14-inch exhaust. It is coupled directly to the pinions of the 16-inch roughing mill, as shown in Fig. 2, but the engine shaft is fitted with two rope pulleys, which carry the ropes driving the 12-inch finishing mill and the 16-inch slitting mill. Seventeen 2-inch ropes are used to drive the 12-inch mill, the driven pulley on the pinion shaft being 7 feet, 6 inches in pitch diameter. Twelve 2-inch ropes drive the 16-inch slitting mill and in this case the driven pulley is 14 feet in diameter. The main engine is designed to operate at 108 revolutions per minute, which is, therefore, the speed of rolls in the 16-inch roughing mill. Since the pulley diameters in the drive for the 12-inch mill are 14 feet and 7 feet, 6 inches, respectively, the speed of this mill is 202 revolutions per minute. The pulley diameters in the drive of the 16-inch slitting mill being 9 feet, 6 inches and 14 feet, respectively, the speed of this mill is 73.2 revolutions per minute. The peripheral speed of rolls in the 16-inch slitting mill is approximately 306 feet per minute; in the roughing mill it is approximately 453 feet per minute and in the 12-inch finishing mill, approximately 846 feet. The peripheral speed in the 10-inch web finishing mill varies from 628 feet to 943 feet per minute. These speeds are high and have an important influence on the capacity of the plant, but in considering them it should be

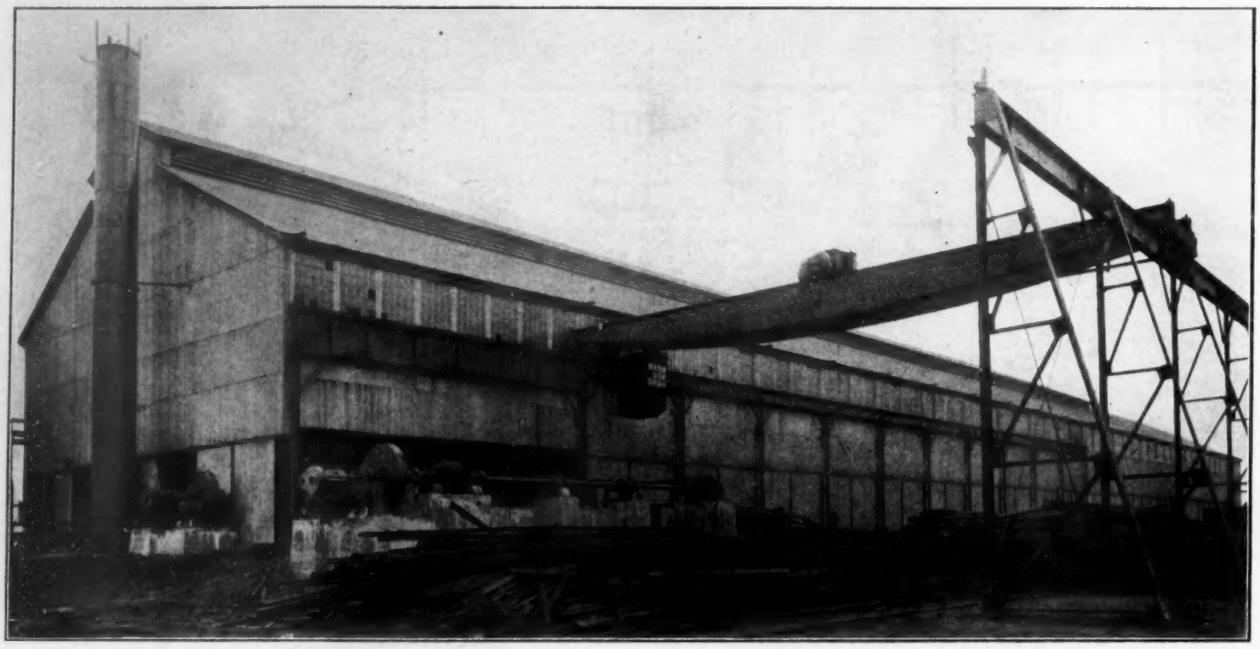


FIG. 3—YARD CRANE AND FURNACE CHARGER

remembered that the work done in each pass is comparatively light and that the kinetic energy of the moving pieces is also small. For purposes of comparison it is interesting to note that the minimum and maximum speed of rolls in the final passes of the 10-inch merchant mill at the Gary plant of the Indiana Steel Co. are 682 and 834 feet per minute, respectively, and that the speed through the final pass of the 12-inch No. 1 mill is 715 feet per minute.

Suitable scale pits, provided with running water, are placed under each mill. The canals from the pits lead to a large concrete-lined sump located in the open space near the heating furnace, as indicated in Fig. 2. The scale is allowed to collect in this sump and may be removed with a grab bucket handled by the traveling crane.

Hot Beds

After leaving the various finishing stands the bars are passed through motor-driven pinch rolls and shoved out onto the three hot beds, designated as *A*, *B* and *C*, respectively, in Fig. 2. The beds are plain girds inclined slightly to facilitate the movement of material across their surfaces. Each bed is equipped with a cold runout table provided with motor-driven live rollers. The beds are unusually long for a mill of this size. Bed *A* is 215 feet in length, while beds *B* and *C* are 170 feet, respectively. Bed *A* is approximately 7 feet in width between the center lines of the hot and cold runout tables; beds *B* and *C* are each 8 feet in width. The distance from the center line of the hot runout table in bed *A* to the corresponding point on bed *B* is 14 feet, 2¾ inches, and the distance between similar center lines in beds *B* and *C* is 33 feet, 1½ inches. The open space between beds *B* and *C* may be used for the storage of finished material.

Bed *C*, which is used for cooling the shapes rolled from the flange of the rail, terminates in a motor-driven vertical shear fitted with an 18-inch knife. A suitable receiving table with a stop for regulating the length of the bars is placed beyond the shear. The distance from the end of the bed to the center line of the shear is 12 feet, 8 inches. The two other hot beds are fitted with motor-driven vertical shears, equipped with 14-inch knives. These shears are placed 12 feet, 6 inches beyond the ends of the beds. On a line 40 feet beyond the No. 2 shears, as shown in Fig. 2, are two motor-driven overhung angle straighteners. Beyond the straighteners is a space 72 feet long and 60 feet wide, which is occupied by the shipping department. A loading track enters the building at one side, as shown in Fig. 2. A 5-ton Northern electric traveling crane is used in handling and loading material in the shipping department. The runway for this crane extends the full length of the building so that it may also be utilized for shifting rolls, removing scale, working about the furnace, etc.

Steam is generated in three 350-horsepower Heine water tube boilers, equipped with Illinois chain grate stokers and located as indicated in Fig. 2. Induced draft is used and the fan, together with the 11 x 14-inch horizontal engine which drives it, were furnished by the Green Fuel Economizer Co., Matteawan, N. Y. Fig. 2 shows the layout of the 3-ton, monorail hoist which supplies coal to the boilers and gas producers. The monorail extends over the coal receiving track and a ¾-yard, single line, Williams grab bucket is used for transferring the coal from the cars to the hoppers located over the boilers and gas producers. A tunnel, open at one end, extends across the front of the boilers and communicates with the ash pits. The ashes are raked out of the pits into barrows and wheeled to the open end of the tunnel where they may be reached by the grab bucket.

Power Plant

The power plant includes a 500-kilowatt, General Electric, mixed flow, 230-volt, direct current, turbo-generating unit, which supplies power to the 10-inch web finishing mill, a 75-kilowatt, high pressure, turbo-generator, which is used as an auxiliary, together with the condensing apparatus. The 500-kilowatt unit receives exhaust steam from the 34 x 48-inch Corliss engine driving the mills. A Weiss barometric condenser, together with a 7½ x 18 x 16-inch Weiss air pump, is installed. The condenser sump is 27 feet, 7 inches in length and 18 feet, 2½ inches in width. Two 6-inch, motor-driven American centrifugal circulating pumps, provided with 8-inch suction and discharge pipes are installed. The power plant is also provided with a suitable switchboard and a 350-horsepower motor controller.

For furnishing pure water two 12-inch wells, 80 feet deep, have been drilled and equipped with motor-driven deep well pumps. The plant also has city water connections.

A well-equipped machine shop, including one double roll lathe, furnished by the United Engineering & Foundry Co., a 42-inch American radial drill, a 30-inch Cleveland open-side planer, engine lathes, drill presses, grinders, etc., has been provided. The roll lathe is driven by individual motors and the other tools are also motor-driven through line shafting in the usual manner.

The United Engineering & Foundry Co., Pittsburgh, acted as consulting engineer and furnished all of the furnace charging and discharging apparatus, together with the tables, mills, hot beds, shears, straighteners, etc. The Laclede Steel Co. is capitalized at $400,000 and maintains its general offices in the Merchants-Laclede building, St. Louis. Thomas R. Akin, formerly superintendent of the western division of the Republic Iron & Steel Co., is president and H. J. Steinbreder is manager of the works. The directors of the company include William E. Guy, George O. Carpenter, L. R. Carter, J. H. Smith, George D. Markham, J. W. Lewis and Thomas R. Akin.

Combination Molding Machine and Plain Power Squeezer

A combination jar-ramming and squeezer molding machine and a plain power squeezer have been added to the line of molding equipment built by the United States Molding Machine Co., Cleveland. The combination machine rams the mold without hand labor as the squeezing operation, accomplished by power, eliminates the necessity of butting-off the mold by hand after jar-ramming. As shown in Figs. 1, 2 and 3, this machine is equipped with a guide, or small cylinder, 5 inches in diameter and 8 inches long, for jar-ramming the mold and the 12-inch cylinder, to which air is admitted after the mold is rammed, is provided for the squeezing operation. While the flask is being filled with sand, air is admitted to the small cylinder and the mold is jar-rammed. After adjusting the bottom-board, the cross-arm carrying the pressing head is swung into position over the flask, it is automatically latched and air is admitted to the large cylinder for squeezing the mold. The frame of the machine to which the cylinder is bolted is L-shaped and to relieve the frame from vibration when jar-ramming, the cylinder is supported at the bottom by two heavy studs.

The contacting surface of the piston and cylinder flanges is of large area, which insures a uniform distribution of the blow and also reduces to the minimum the possible crystallization of the metal in these castings. The guide casing is attached to the cylinder with studs and the guide is similarly attached to the piston. The table is attached to the piston with countersunk screws and can readily be removed and replaced by a large table if desired. The back frame of the machine forms the support for the swinging cross-arm to which the pressing head is attached. The cross-arm revolves around a heavy shaft in the top of the frame and the pressing head is attached to a 2-inch screw provided with a heavy lock nut which permits of the rapid adjustment of the head for any depth of flask. This feature enables

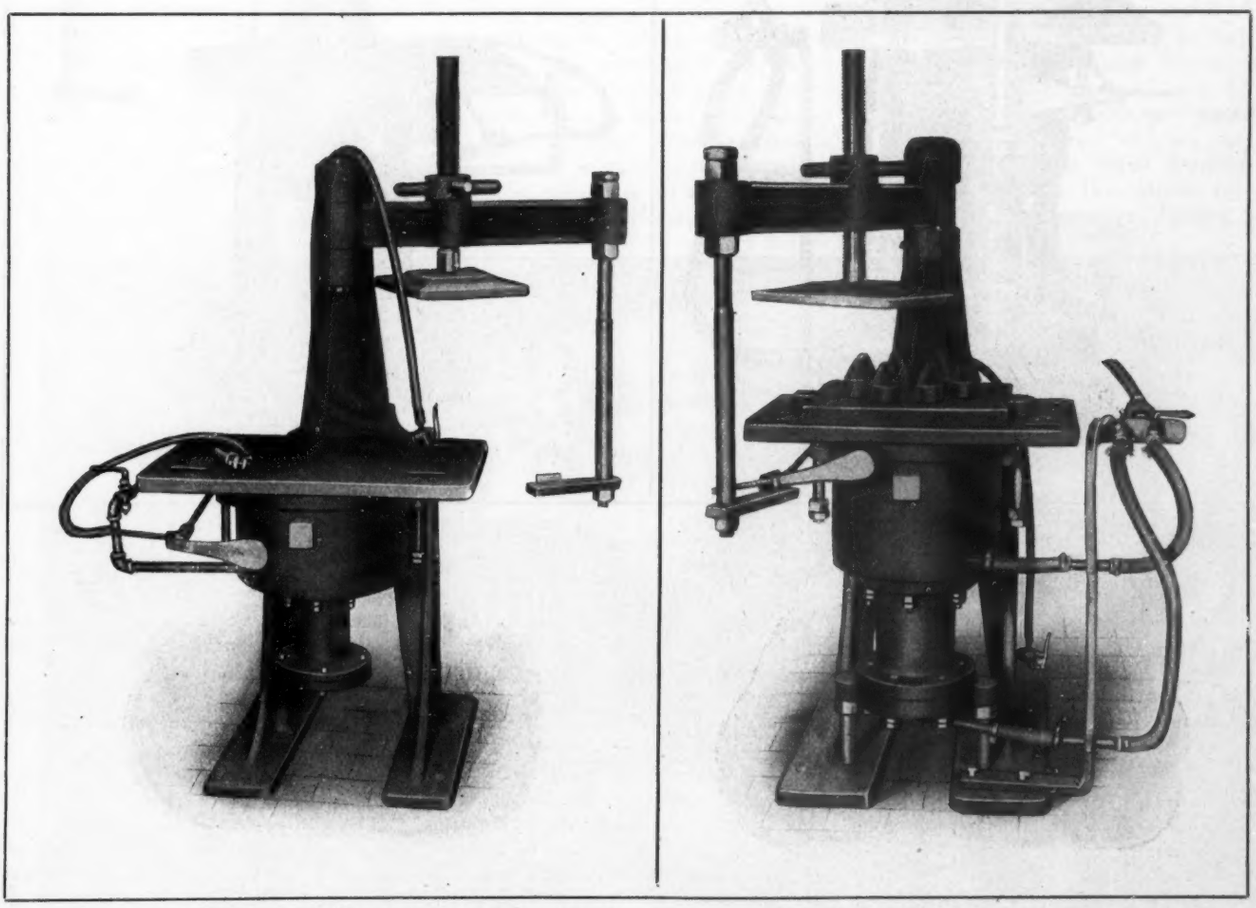


FIG. 1—COMBINATION JAR-RAMMING AND SQUEEZING MOLDING MACHINE

FIG. 2—PATTERN PLATE ON TABLE OF COMBINATION MOLDING MACHINE

the operator to set the head so that it will just clear the bottom-board and the distance of piston travel for the squeezing operation is thereby greatly reduced and will rarely exceed 1 inch. By this arrangement the air consumption is economized.

To the free end of the cross-arm is attached an adjustable rod provided with a latch which engages with a lug on front of the cylinder when the mold is being squeezed. This machine is equipped with a knee valve for actuating the vibrator and a blow-off cock and has a capacity for ramming molds up to 12 inches in depth, regardless of the form of the pattern or the amount of draft. The table is 18 x 26 inches and will accommodate flasks of this size. While four slots have been provided, one in each corner of the table for attaching pattern plates, or follow-boards, it is not necessary to fasten the pattern to the table as it will remain in the position in which it is placed throughout the jar-ramming operation.

In Fig. 1 this combination machine is shown with the pressing head swung aside and without a pattern plate on the table. In Fig. 2 the pattern plate has been placed in position ready to receive the flask. The mold, in position for the squeezing operation, is shown in Fig. 3. The bottom-board has been adjusted on the snap flask, the cross-arm carrying the pressing head has been swung over and latched, and to finish the mold, air is admitted to the 12-inch cylinder for squeezing. Discharging the air from this cylinder releases the flask and presser head and when the cross-arm is unlatched it is swung back into the position illustrated in Figs. 1 and 2 and the mold is removed to the floor. This machine also can be used as a plain jar-rammer and when thus employed the cross-arm and pressing head are swung aside. In the construction of this machine, the use of springs has been eliminated.

The plain power squeezer built by the United States Molding Machine Co., is illustrated in Fig. 4. In practically all essentials this machine is similar to the combination jar-rammer and squeezer shown in Figs. 1, 2 and 3, with the exception that it is not equipped for jar-ramming. The guide of this plain squeezer is 3 inches in diameter instead of 5 inches on the combination machine. The supports for the cylinder to relieve the shock of the jar-ramming blow also have been eliminated. The cylinder to which air is admitted for squeezing the mold is 12 inches in diameter and the machine is equipped with a knee valve for the vibrator as well as a blow-off cock.

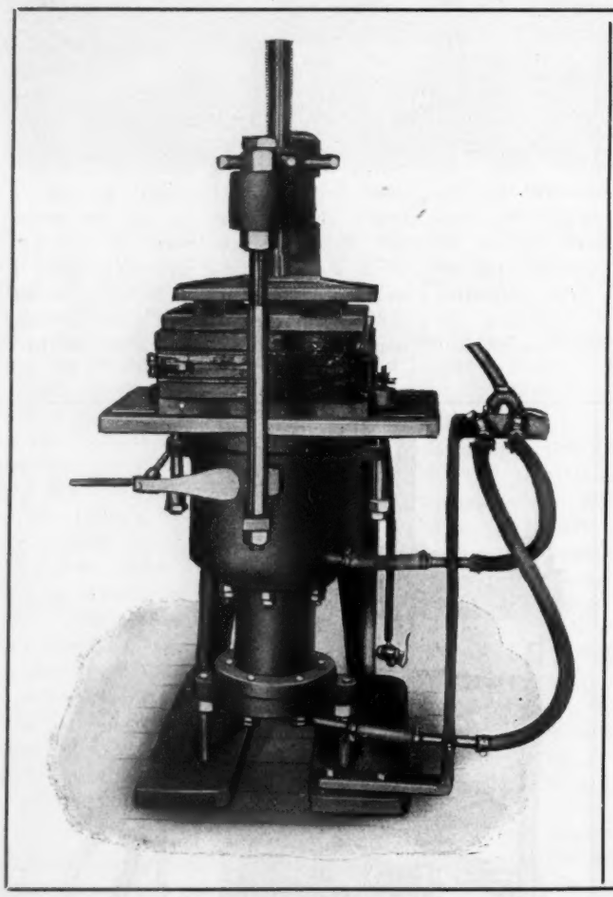


FIG. 3—COMBINATION MOLDING MACHINE IN SQUEEZING POSITION

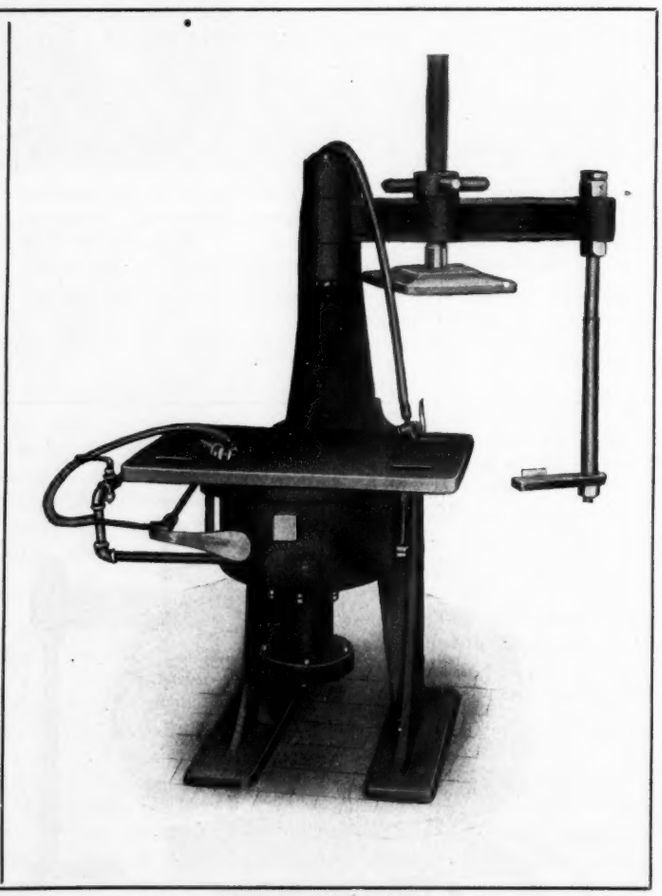


FIG. 4—PLAIN POWER SQUEEZER

Designed by Fieger.—The jobbing and sheet mill addition to the plant of the Portsmouth Steel Co., Portsmouth, O., which was described and illustrated in The Iron Trade Review of March 28, was designed and built by the consulting engineer of the company, Frederick E. Fieger, House building, Pittsburgh, who also prepared plans for the installations of the turbo-generator set and the chain grate stokers in the three boiler houses of the plant.

The Business Men's Club, Cincinnati, will install an electric generating plant to cost approximately $7,000. The plant will be driven by gas engine and will be used to supply current for the club.

Power Station for an Iron Ore Unloading Plant

Description of the Electrical Equipment Which Furnishes the Power for the Philadelphia & Reading Fast Plant

A description of the iron ore unloading plant, installed by the Philadelphia & Reading railroad at pier No. 14, Port Richmond, Philadelphia, by the Brown Hoisting Machinery Co., Cleveland, was described in THE IRON TRADE REVIEW, March 9, 1911. At that time the power house was under construction, but it has since been completed. The electrical equipment is unique among ore-handling plants, in which, of course, the load is always intermittent, in that no auxiliary devices are used for maintaining the voltage constant through varying loads, the inherent regulation of the machines being so satisfactory that none is required. In most plants of this kind, flywheel equalizer sets with automatic regulation, or some device of a similar nature, is usually employed to reduce the variable load to an average value, but in this instance no such devices are used and the variation is only from 3 to 4 volts with a range in load on the rotaries from 2,000 to 2,700 amperes.

After considerable investigation, it was decided to install steam turbine alternators and rotary converters in the central power station. Inasmuch as a small plant, located about one and one-half miles from the power station, must be operated also, alternating current was selected so that it can be transmitted readily to the smaller plant, using transformers at both the generating and receiving ends. The generating equipment of the power house consists of two 1,000-kilovolt ampere Westinghouse-Parsons steam turbines, generating six-phase, 60-cycle alternating current at 178 volts, at which voltage it is delivered to two 750-kilowatt, six-phase, 60-cycle Westinghouse rotary converters delivering direct current to the switchboard at 750 volts, thus forming two complete units.

Exciters for Turbo-Alternators

Excitation for the turbo-alternators is furnished by a 48-kilowatt, 125-volt generator, direct-connected to a 9½ x 9-inch Westinghouse engine. A 125-kilowatt, three-wire, direct-current generator is also used to supply exciting current and for lighting the building which is arranged for three-wire distribution. There are also four small arc machines belted to high speed steam engines for furnishing the light to the grounds and docks. The switchboard consists of 12 panels, Figs. 2 and 3, and has a double set of bus-bars so that the load can be carried on either set of machines. The first panel is equipped with an ammeter and an oil switch for the circuit leading to the sub-station, previously mentioned. There are also six single-pole, double-throw knife switches mounted on this panel for controlling the circuit on the generator side of the step-up transformers. The two generator panels each contain an ammeter, a wattmeter, a field ammeter and switch, rheostats, voltmeter and ground detector switches, as well as six single-pole, double-throw knife blade switches for the generator. The two exciter panels, one for the 48-kilowatt, two-wire and one for the 125-kilowatt, three-wire machine, contain the usual equipment of meters and switches, including one for the balancer coils on the three-wire machine. A small panel is placed next to the exciter panels for taking care of the three-wire lighting system.

The two rotary converter panels each contain a direct-current voltmeter and ammeter, rheostat, field switch, two single-pole, single-throw, 4,500-ampere knife twitches and control switches for two single-pole, remote-control, electrically-operated circuit breakers, located in the basement. The distribution to the ore-handling and car haulage equipment is made from the panel adjacent to the rotary panels, containing ammeters, switches and control switches for the electrically-operated circuit breakers. A blank panel and two panels for the control of the various arc lighting cir-

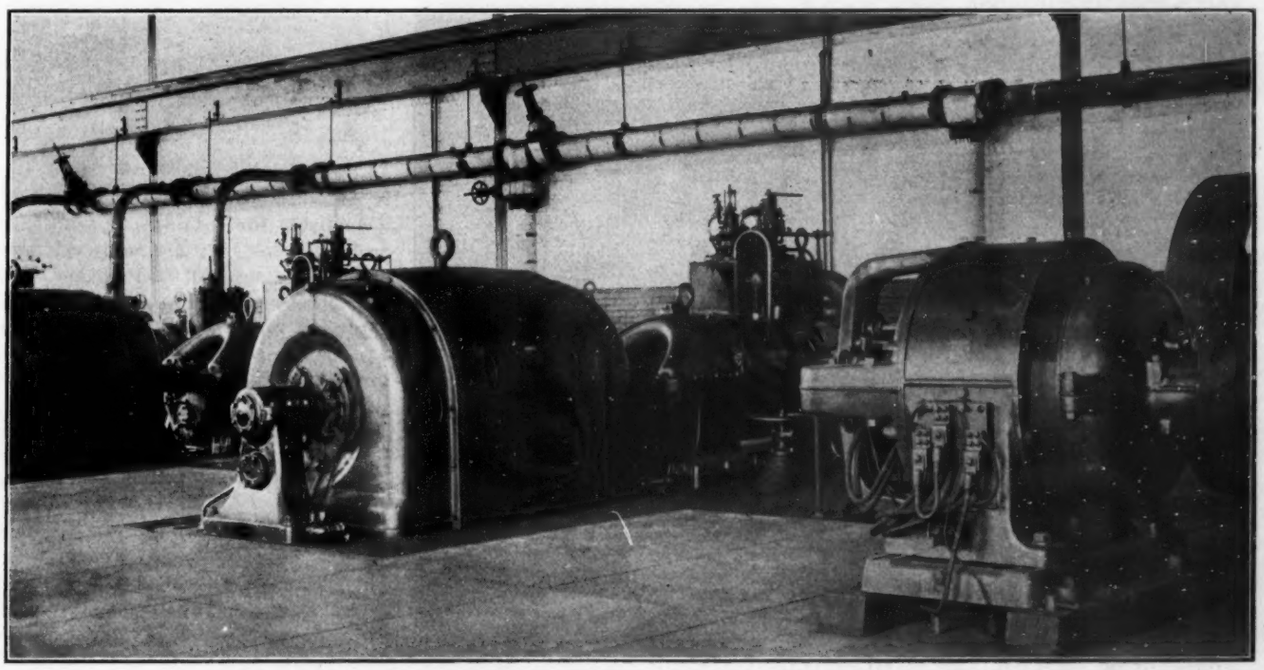


FIG. 1—A VIEW IN THE POWER HOUSE, SHOWING TWO OF THE TURBO-GENERATORS

FIG. 2—FRONT VIEW OF THE SWITCHBOARD

cuits throughout the buildings and ground complete the board.

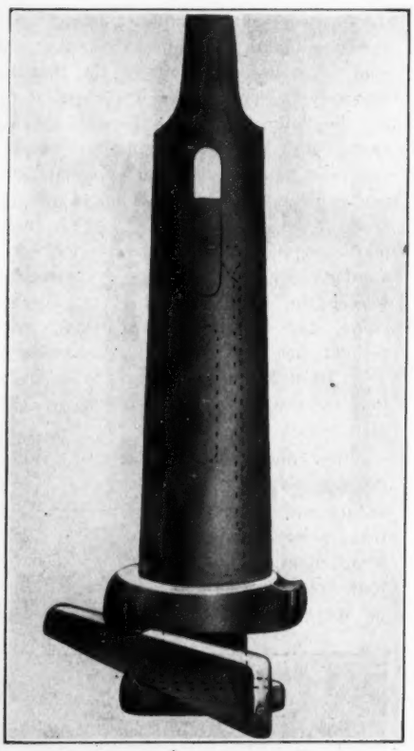
Two Westinghouse-Leblanc condensers are used in connection with the turbines and produce a vacuum of from 29 to 30 inches when operating under normal conditions. The engine room is commanded by a 10-ton, hand-operated crane, which facilitates the handling of the machinery. This room is unusually large and well-lighted, and affords plenty of space for attending to the various machines, as indicated in Figs. 1 and 3.

The sub-station contains one 200-kilowatt rotary with step-down transformers and switchboard. The current is used for operating the smaller ore-handling plant and the voltage is stepped-up at the generating plant to 2,200, at which voltage it is transmitted to the sub-station, where it is stepped-down to the rotary voltage. By this system a highly efficient plant with a minimum amount of attendance is maintained in a very economical manner. The turbo-generators, rotary converters and switchboard with electrically-operated circuit breakers were furnished by the Westinghouse Electric & Mfg. Co., and the condensers by the Westinghouse Machine Co., East Pittsburgh, Pa.

FIG. 3—REAR VIEW OF THE SWITCHBOARD, SHOWING THE NEAT ARRANGEMENT OF THE WIRING

An Improved Drill Socket

Scully-Jones & Co., Railway Exchange building, Chicago, have recently placed on the market a new drill socket which is illustrated herewith. It is made of special steel with the standard Morse taper inside and out. On the ouside is a keyway, which gives a positive body drive and eliminates twisting stresses on the tang. The interior of the socket is provided with a flat which makes it available for holding old drills with broken tangs. At the bottom there is a flange around the socket which strengthens it greatly and also forms a groove for the drift key, making it an easy matter to separate nested sockets.



AN IMPROVED DRILL SOCKET

The International Oxygen Co., New York City, has recently completed the installation of an oxy-hydrogen generating plant for the United States navy department, at the Brooklyn navy yard. The capacity of the plant is 3,500 cubic feet of oxygen and 7,000 cubic feet of hydrogen in 24 hours. The navy yard previously generated its oxygen by a chemical process.

Sturtevant Steam Turbine

A new steam turbine designed for direct-connection to fans, blowers, electric generators, centrifugal pumps and similar apparatus, built by the B. F. Sturtevant Co., Hyde Park, Mass., is shown in the accompanying illustrations. In designing this machine steam economy at low speeds was given careful consideration. The turbine is of the single-stage, multi-impulse type, the steam being entirely expanded in the nozzles, but by means of the semi-circular reversing buckets it imparts several impulses to the motor.

The rotor, Fig. 1, is a solid steel forging with semi-circular buckets milled into the rim. This eliminates the uncertainty of the built-up bucket wheel and results in a practically indestructible rotor. A supplementary bucket which catches the spill of the nozzles, effects great economies in steam consumption, particularly when the turbine operates at low speeds. Nozzles and buckets are cast together in segments which are bolted to the inside of the turbine casing and receive their steam from an annular steam chamber within the casing. Individual nozzle valves are provided which permit of closing certain nozzles when the turbine is operating for extended periods on part load. The effect of closing these nozzles is to maintain high efficiency at light loads. The bearings are of the spherical type and are lubricated by a channel-scoop oiling ring. The oil is taken from the reservoir by a rapidly revolving channel-shaped oiling ring and is held therein by centrifugal force until diverted to the bearing by means of a fixed scoop. A sensitive centrifugal governor controls the speeds of the turbine to a close degree of regulation between no load and full load. An emergency governor is provided which closes an emergency valve if the main governor should refuse to work and if the speed should exceed a predetermined maximum. The turbine is compact and self-contained and requires no foundation other than a floor of sufficient strength to support its dead weight. Fig. 2 shows the turbine and in Fig. 3 the parts of the machine before assembling are illustrated.

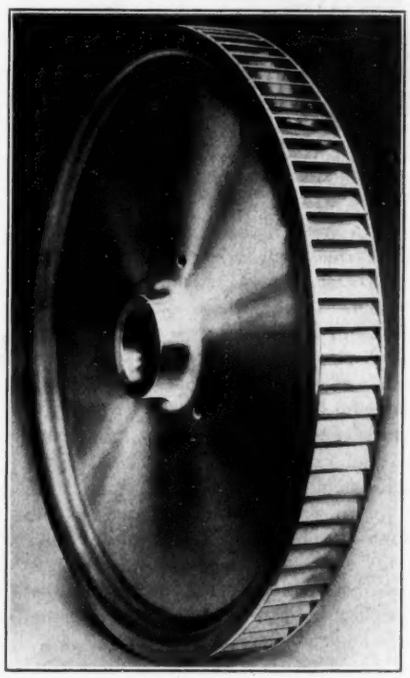


FIG. 1—SOLID FORGED STEEL ROTOR OF THE STURTEVANT TURBINE

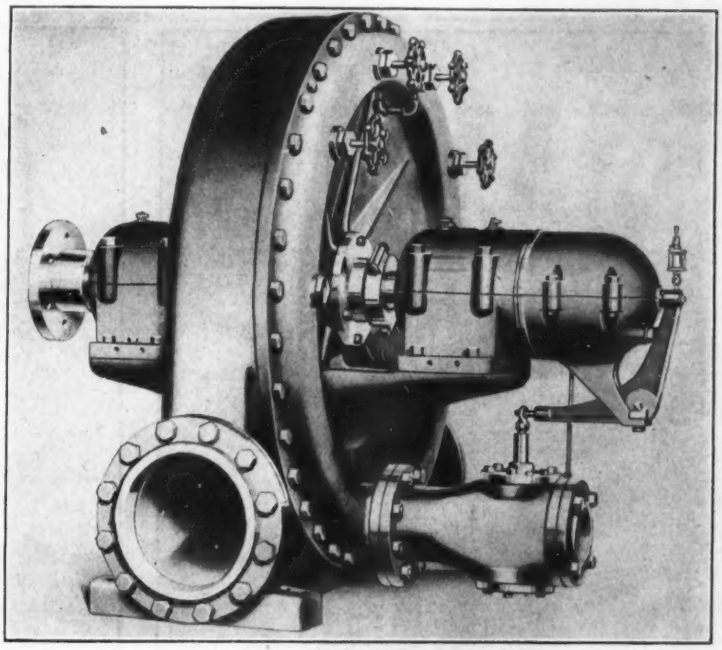


FIG. 2—THE NEW STURTEVANT STEAM TURBINE

The Billings-Brown Co., 208 United Bank building, Cleveland, is sending to the trade an eight-page circular which contains numerous testimonial letters regarding the satisfactory use of the parting compound made by this company for gray iron, malleable iron, aluminum, brass and bronze castings.

The Bethlehem Steel Co. has placed an order with the Clark Car Co., Pittsburgh, for 100 center dump coke cars. The cars will be of the hand operated type with balanced doors.

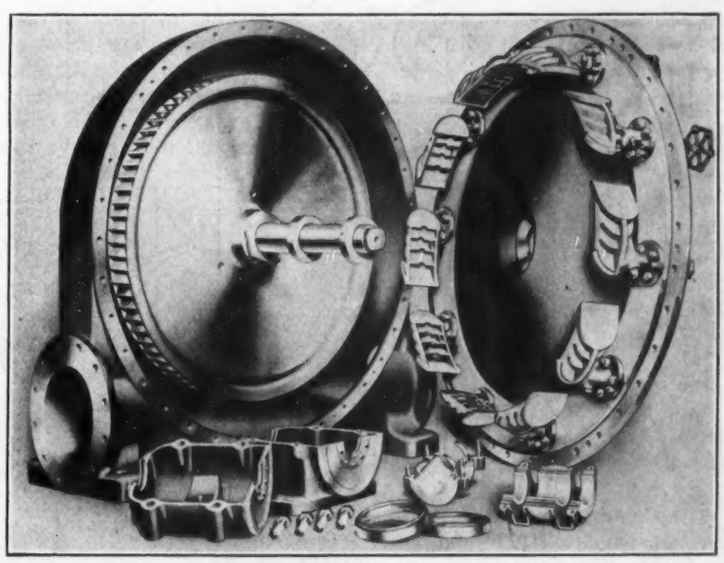


FIG. 3—PARTS OF THE STURTEVANT STEAM TURBINE

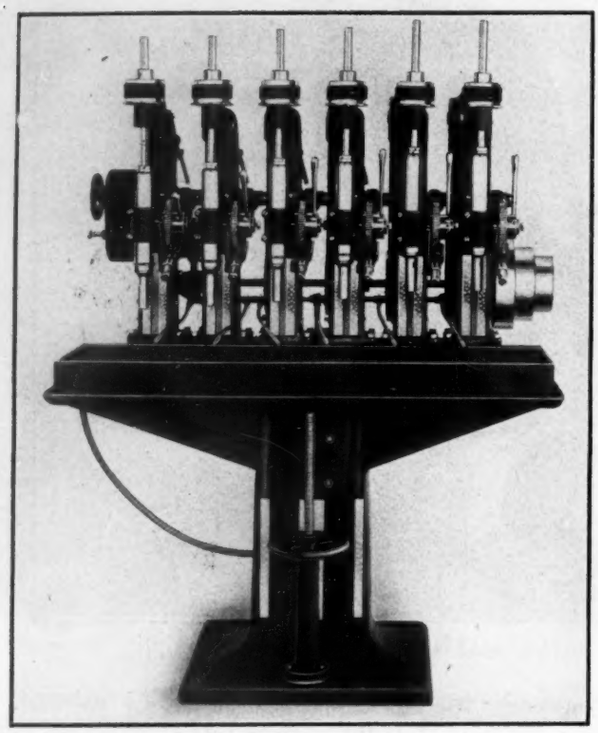


FIG. 1—FRONT VIEW OF SIX-SPINDLE POWER FEED DRILLING MACHINE

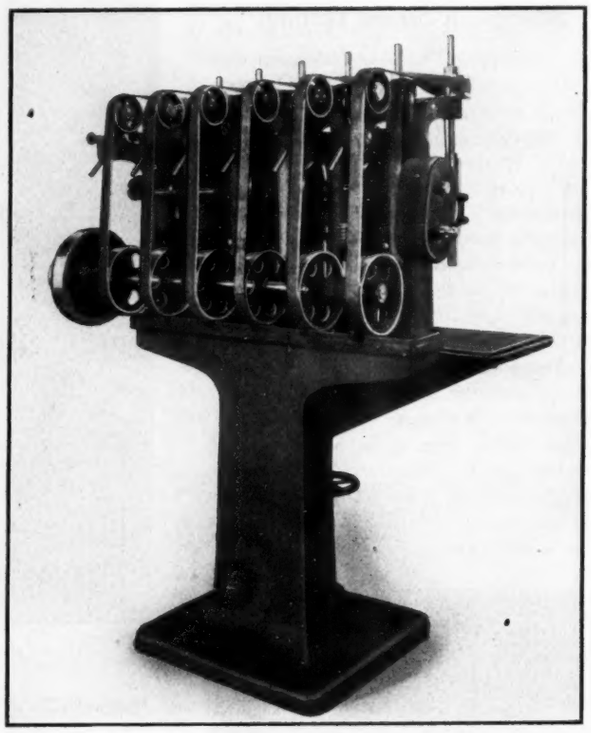


FIG. 2—REAR VIEW OF SIX-SPINDLE POWER FEED DRILLING MACHINE

Power Feed Drilling Machines

The Dwight Slate Machine Co., Hartford, Conn., is manufacturing a new line of power feed drilling machines equipped with two types of feeding mechanism, one of which is by cam and the other by worm and worm gear. The automatic feed by cam is intended for drilling repetition work, which can be conveniently and rapidly exchanged in fixtures. The feeding movement of the spindles is controlled by cams which are located upon the feeding shaft, according to the number of spindles in the machine. In a four-speed machine the cams would be 90 degrees apart. This arrangement results in feeding the spindles in progressive order, and due to the control of each spindle by cam, the feed return and idle time for exchange of work is automatic and continuous. The operator, on the other hand, is merely required to feed the

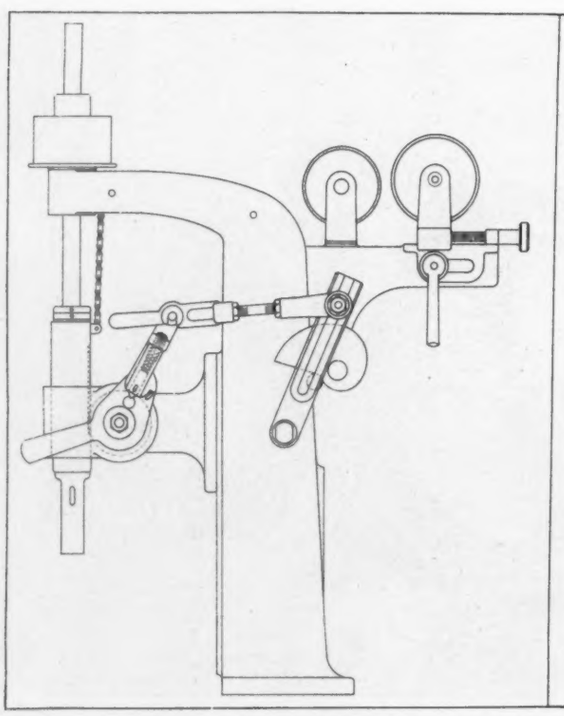


FIG. 3—SIDE VIEW OF AUTOMATIC CAM FEED MECHANISM

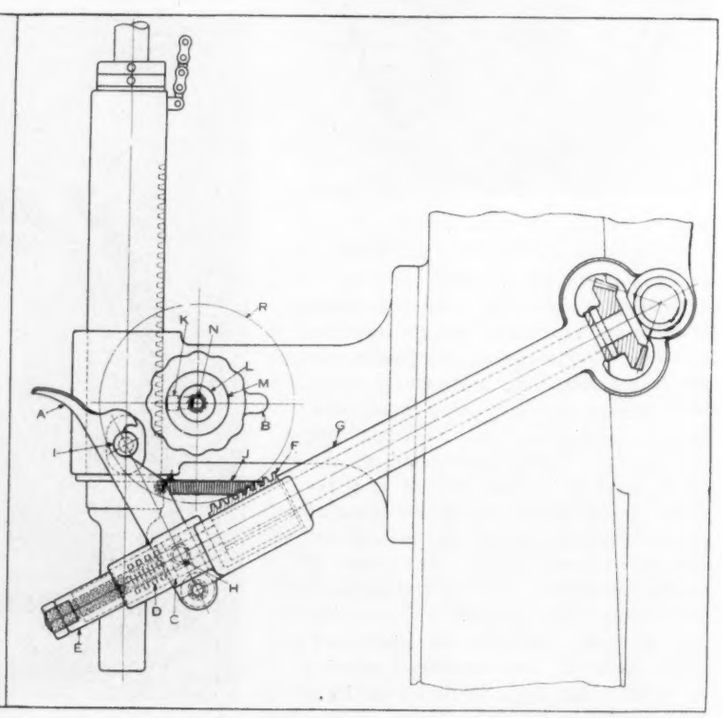


FIG. 4—SIDE VIEW OF AUTOMATIC WORM AND WORM GEAR FEED MECHANISM

work to the machine. A side view of the automatic cam feed mechanism is illustrated in Fig. 3. Each spindle also is equipped with an automatic release or safety device which consists of a jointed lever which operates to automatically throw out the feed in case of overload at the drill point. This acts as a safety to prevent breakage in the feeding mechanism and eliminates a large amount of breakage of twist drills. Rapid and convenient adjustment for different depths of drilling up to 1½ inches is provided for by the location of a connecting link in the slotted swiveling arm operated by the cam. The bearings are of the oil well type and the individual drive to each spindle is by endless belt. The elevation of the table is controlled by a screw and hand wheel. The height of the machine is 72 inches and the weight, according to size, varies from 800 to 2,050 pounds.

Fig. 4 is a side view of the worm and worm gear automatic feed mechanism. The worm, *F*, is supported and held in engagement with worm gear, *R*, by means of the latch arm, *A*, resting on the supporting stud, *I*. The adjustment of the automatic knock-off for any depth of feed up to 5¼ inches is obtained by locating and fastening the ring, *B*, to rotate with pinion shaft, *L*, and in such a position with respect to the depth of the feed desired which will permit the projection on ring, *B*, to travel the required distance necessary to disengage latch arm, *A*, from the supporting stud, *I*. The screw, *N*, and the shoe, *K*, provide convenient means for securely locking ring, *B*, to shaft, *L*. A stop pin determines the maximum adjustment to ring, *B*. The automatic safety release consists of a worm, *F*, which is keyed to rotate with its shaft, but is free to slide longitudinally. Under normal load, this worm is held in operative position with respect to worm gear, *R*, by means of ring, *C*, and compression spring, *D*. When overload occurs, compression spring, *D*, will yield, allowing worm, *F*, to slide sufficiently to force the ring, *C*, carrying the pin, *H*, to disengage latch arm, *A*, from the supporting pin, *I*. The adjustment for tension of compression spring, *D*, for drills of different diameters is made by cap, *E*, and by locking the nut, as indicated. The feed may be stopped at any time by throwing out latch, *A*, or it may be started by lifting the worm shaft supporting arm, *G*, then latch, *A*, will fall into position on the supporting stud, *I*, by means of a tension spring, *J*.

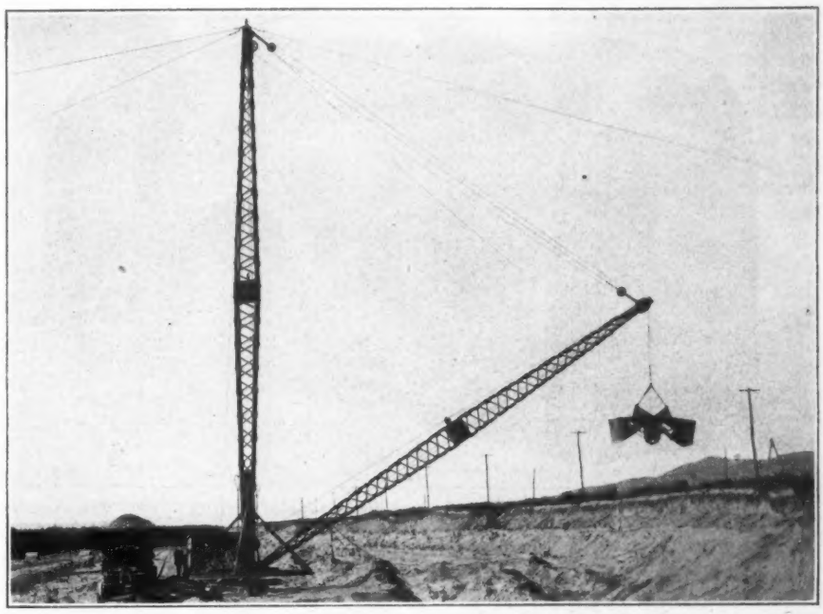


FIG. 2—PORTABLE, 10-TON DERRICK

Portable Hoist and Derrick

The Clyde Iron Works, Duluth, Minn., has designed a portable electric hoist and derrick outfit, which is especially suited to certain classes of yard service in industrial plants and also for construction work. The hoist, Fig. 1, is mounted on heavy steel skids which are made from 12-inch I-beams, 25 feet long, as shown in the illustration and is, therefore, entirely portable and may be moved about by its own power. Fig. 2 shows the steel derrick which accompanies the hoist. The derrick boom is 75 feet long, the mast being 90 feet high. The diameter of the bull wheel is 20 feet. The derrick is also mounted on steel skids made from 12 inch I-beams, 24 feet long, and may be easily moved about. It has a capacity of 10 tons and weighs complete, 19,650 pounds.

The hoist has a capacity of 12,000 pounds on a single line at 144 feet per minute and is equipped with three drums, 14 inches in diameter. Between flanges the drums are 24 inches in length, the diameter of the drum shafts being 5 inches. A double cone friction with maple blocks, 40 inches in diameter, is used, the diameter of the friction gears being 42 inches with 5-inch face.

The hoist is equipped with a bull wheel swinging gear having drums 18 inches in diameter with 8-inch faces running on a shaft 6 inches in diameter. The capacity of the swinging gear is 25,000 pounds at 69 feet per minute and the length of the swinging gear frame, in addition to the hoist bed, is 5 feet.

All the levers for the operation of the hoist are placed on an elevated platform at the rear, giving the operator a full view of the work at all times. There are four thrust levers, four foot levers, three pawl levers and the motor controller lever, making a total of 12. The foot levers, as well as the hand levers, are equipped with automatic ratchet-locking devices.

The hoist is equipped with a 75 horsepower, Westinghouse, mill-type, series-wound, variable-speed motor. Complete with skids it weighs 33,775 pounds.

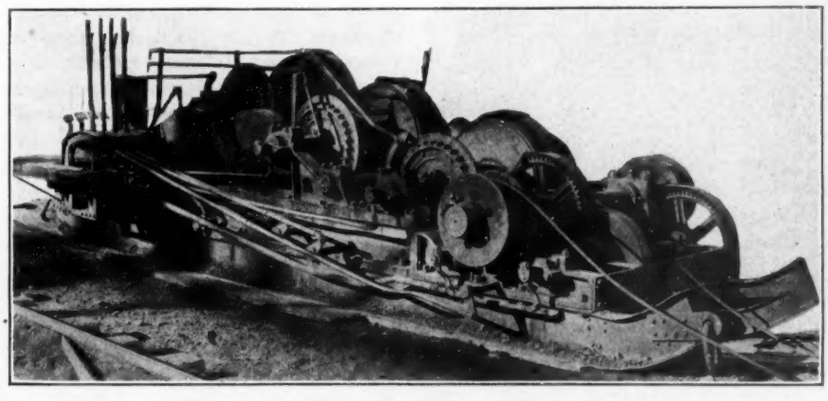


FIG. 1—ELECTRIC HOIST ON STEEL SKIDS

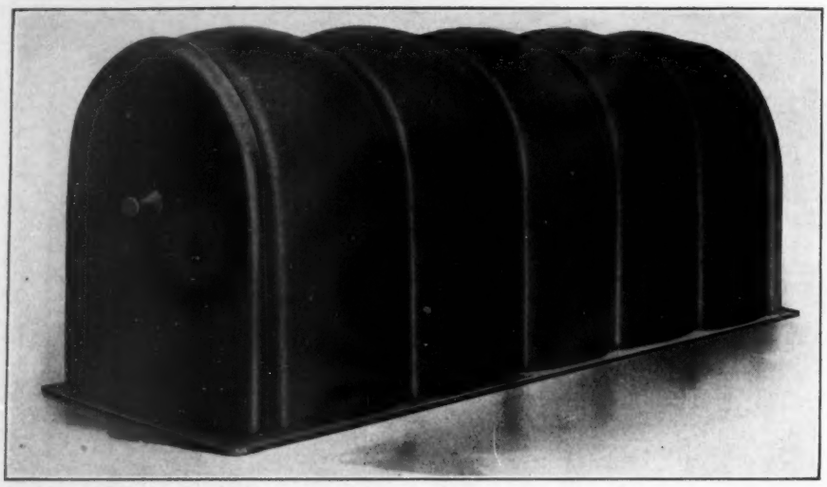


FIG. 1—EXTERIOR VIEW OF ANNEALING BOX FOR SHEET AND TIN PLATE MILLS

Annealing Box for Sheet and Tin Mills

A new type of annealing box adapted for sheet and tin mill service, built by the American Annealing Box Co., Canton, O., is shown in Figs. 1 and 2. The box is built of curved, flange steel plates riveted together on the inside, as illustrated in Fig. 2. This construction protects the rivets from the direct action of the flame, thereby greatly prolonging the life of the box. The curved surfaces are not affected by the frequent expansion and contraction following the heating and cooling of the box, and return to their original form without distortion. The expansion and contraction of the curved surfaces relieve the tension and strain on the joints to a considerable extent. The joints, both on the inside and outside of the box are caulked as a further preventive against any possible leakage. The ends are made of cast steel, 1 inch thick, with trunnions cast-on and the intermediate sections are made of plates, ¾ inch thick, while the bottom reinforcing angles are made of open-hearth steel. Although the material entering into the construction of this box is sufficiently heavy to insure ample strength, it is not of a thickness sufficient to retard the passage of heat to the interior of the box. The time required for annealing is thereby considerably reduced and the number of heats that can be obtained is materially increased. An outside view of the box is illustrated in Fig. 1, which shows the curved surfaces and the entire absence of seams, sharp corners, etc., which usually first burn away, and Fig. 2 shows the interior construction.

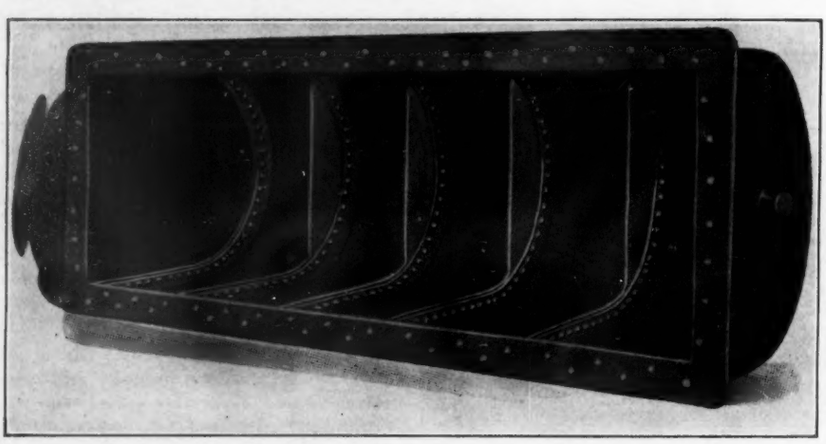
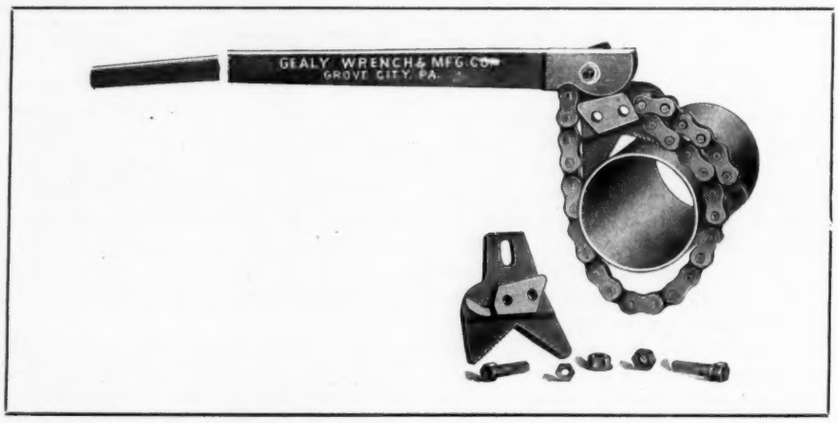


FIG. 2—INTERIOR VIEW OF ANNEALING BOX, SHOWING ITS CONSTRUCTION

A New Pipe Wrench

A new type of chain pipe wrench, which can be furnished in sizes for handling 16-inch pipe, manufactured by the Gealy Wrench & Mfg. Co., Grove City, Pa., is shown in the accompanying illustration. The wrench consists of a handle with loosely mounted alligator jaws and a flat link chain. The handle serves as a cam lever and the jaws, which are loosely mounted by a slot through which passes the bolt fastening them to the handle, serves as a cam thrust. This slot permits the handle bolt to change its position and gives free play of the handle as a cam lever. The chain is fastened permanently to the handle on one side and hooks in the jaws on the opposite side. The chain is tightened by the action of the cam lever which forces the engagement of the jaws and pipe. As the jaws are mounted loosely on the handle, the cam lever can play freely on the cam thrust and the release of the grip is positive and instantaneous, due to the fastening of the chain to the handle at one side and to the jaws on the other. It is claimed that the leverage principle assures a powerful grip and that the alligator jaws with the chain impart an equal pressure on the pipe, thereby preventing crushing. These wrenches are made of drop-forged, high carbon steel and the chain is of the usual flat link type. This wrench is made in five sizes for pipe from ½ to 12 inches in diameter, although wrenches can be



A NEW TYPE OF PIPE WRENCH MANUFACTURED BY THE GEALY WRENCH & MFG. CO., GROVE CITY, PA.

supplied to handle 16-inch pipe. The overall lengths of the wrenches range from 18 to 66 inches and the weight from 3½ to 76 pounds. The amount of chain furnished varies from 12 to 54 inches, according to the size of the wrench, but if required, special lengths can be furnished.

Scraping Stand

A scraping stand equipped with an adjustable tilting table, built by the New Britain Machine Co., New Britain, Conn., is illustrated in Figs. 1 and 2. The table is 16 x 30 inches and contains three ⅝-inch T-slots to take bolts for holding the work in place. The table has a vertical adjustment of 6 inches and the two extremes of height from the floor are relatively 28½ and 34½ inches. The table may be swung through a circle and it can be tilted 90 degrees on either side of the horizontal so as

FIG. 1—SCRAPING STAND WITH TABLE IN NORMAL POSITION

to place any surface to be scraped in a convenient position. The top is lowered or raised by turning and is provided with a safety limiting stop. Turning the table also places the work in proper relation to the height. The tilting lever telescopes under the table and can be used on either side. All settings are made with double set handles, readily reached from either side of the stand. Fig. 1 shows a scraping stand with table in normal position and in Fig. 2 the table is shown elevated and tilted with the work in position.

Scully-Jones & Co., 316 Railway Exchange building, Chicago, have been appointed exclusive agents in the states of Illinois, Indiana, Iowa and Wisconsin for the sale of high-speed steel manufactured by Vickers, Limited, Sheffield, Eng.

Book Reviews

Works Management, by Wm. D. Ennis, professor of mechanical engineering in the Polytechnic Institute of Brooklyn; 194, 6 x 9-inch pages; published by the McGraw-Hill Book Co., New York, and furnished by THE IRON TRADE REVIEW for $2, postpaid.

In this work, management is considered in its broadest sense and the author in his preface distinctly points out that his efforts should not be considered a presentation of Taylorism. Great admiration is expressed for the achievements of F. W. Taylor in cost reduction, particularly in the machine shop and engineering works, but it is stated that his machine shop accomplishments are largely matters of mechanical method rather than of management. Mr. Ennis states that the conception of efficiency, with the engineer, is one of perfect definiteness. He further states that efficiency is the quotient of the thing accomplished by the effort expended, of effect by cause, both being measured in the same definite unit. He considers the labor-hour as the final unit of efficiencies and values, and a product should be measured in proportion to the hours of labor it commands and cost in the labor-hours consumed. That this aspect of the question, the author states, is academic rather than practical. Since management efficiency is to be measured in dollars, the principal field for investigation is that of cost and for that reason a study of cost covers a large part of the whole field of management. The subject is treated in a novel manner and the work will bear reading by all engaged in the management of plants of any kind. Various premium systems are discussed and analyzed. A number of exercises have been incorporated which are intended for use where the book is employed in class-room instruction for the purpose of emphasizing the principles and illustrations presented.

Industrial Depressions; by Geo. H. Hull; 277 8 x 9-inch pages; published by the Frederick A. Stokes Co., New York, and furnished by THE IRON TRADE REVIEW for $2.75, net.

Geo. Huntington Hull, the author of this work, has been engaged in the iron business for 49 years and is, therefore, well equipped to discuss the subject of industrial depressions. Nine periods of industrial depression, as distinguished from financial panics, have occurred in America and Europe since 1800. Many theories of the causes of these depressions have been suggested and these theories are carefully analyzed by Mr. Hull. He concludes that the countries which have suffered most severely from these depressions are the great producers of iron and steel and in each instance the state of the iron trade could have been taken as an indication of the ensuing period of declining trade.

Of timely interest is Mr. Hull's declaration that presidential elections have never caused eras of trade decline with the exception of 1896, when the uncertainty as to the future basis of the monetary system affected business. By elaborate tables the author shows that the years of industrial depression have not even coincided with presidential election years, except in two cases, although there have been 25 elections and 17 different years of depressions since 1812.

Periodicity, as applied to industrial depressions, is characterized as ab-

FIG. 2—SCRAPING STAND WITH TABLE ELEVATED AND TILTED AND WORK IN POSITION TO BE SCRAPED

surd. Mr. Hull points to the great diversity in the length of the cycles claimed for the eras of poor trade conditions, as well as to the great variety of causes assigned for them by their respective advocates. Mr. Hull concludes that there is no basis for periodicity as applied to the industries, except the simple fact that when the industries increase from their lowest movement to their highest point and in turn fall from their highest to their lowest point, a period of time necessarily elapses. That lapse of time has probably never been exactly the same in two instances and probably never will be. The remedy for these depressions, according to the author, consists of monthly in-

formation of the future demand for structural materials, as far ahead as construction contracts are entered into and monthly information of the capacity of the country to produce construction materials as far ahead as the increase or decrease in the capacity can be known. It is pointed out that the industries have suffered from a lack of knowledge of the volume of construction under contract for the future and the capacity of the country to furnish construction material for future consumption. The statistics necessary to carry out the proposed plan it is recommended, should be gathered directly by a department of the national government.

Physical Tests and Chemical Analyses of Iron and Steel; by O. Bauer and E. Deiss; 258 6½ x 9½-inch pages; illustrated; published by Julius Springer, Berlin, Germany, and furnished by THE IRON TRADE REVIEW for $2.25, postpaid.

This German work is divided into two sections, the first being devoted to tests of iron and steel, written by O. Bauer, and the second section, by E. Deiss, discusses chemical determinations of iron and steel. Considerable space is devoted to metallography and methods of obtaining and testing bars for gray iron, pig iron, malleable and steel determinations are included. Methods of making chemical analyses also are clearly outlined, and the work throughout is exceedingly comprehensive.

Measurement of High Temperatures, by G. K. Burgess and H. Le Chatelier; 510, 5½ x 9-inch pages; published by John Wiley & Sons, New York, and furnished by THE IRON TRADE REVIEW, for $4, postpaid.

This work might almost be considered the third edition of the first volume on high temperature mesurements written by H. Le Chatelier, and which was subsequently translated into English by G. K. Burgess. The second edition written by Mr. Burgess contained much new material and for the volume recently issued, the second edition was practically rewritten and it can no longer be considered a translation, but practically an original work on the subject of high temperatures. In its compilation three classes of readers were kept in mind, namely, the student, to whom the historical aspect and fundamental principles are of prime interest; the engineer, who is interested mainly in adapting some instrument or method to his particular technical operation and the investigator, who has an intensive interest in accurate methods of measurement and their adaptability to his needs. Practical types of instruments for measuring high temperatures, while described in detail, do not receive as much attention as the principles underlying them. In the preparation of this work nearly all of the pyrometer manufacturers were consulted as to their practice and the material thus made available has been freely drawn upon.

Applied Methods of Scientific Management; by Frederic A. Parkhurst; 325 6 x 9-inch pages; illustrated; published by John Wiley & Sons, New York City, and furnished by THE IRON TRADE REVIEW for $2, net.

While this work is an amplification of a series of articles written by the author and published in serial form in 1911, much new matter has been included in the appendix. The instructions and forms show substantially the medium employed to incorporate the principles of scientific management into an efficient organization suitable for a plant under the specific conditions illustrated. The author believes in developing existing plant to its highest possible efficiency before making large outlays for extensive alterations or additions. The obligations of the employer and employe to each other have not been overlooked, as their interests are considered mutual. Theories and generalities have been avoided and the subject has been treated from a practical point of view.

Smelting Chromiferous Iron Ore

A correspondent in Greece states that there are deposits of chromiferous iron ore extending for a considerable distance in the northeastern part of Greece and on the islands of Eubea and Skyros; the ores have the following approximate analysis: Fe, 47-50 per cent; Cr_2O_3, 2.5-3; Al_2O_3, 9-10 per cent; SiO_2, 7-11. He inquires with regard to the possible elimination of the chromium and to the practice in smelting chromiferous Cuban ores. In discussing the latter points, Bradley Stoughton writes:

In the smelting of chromiferous ores of Cuba in the blast furnace, followed by refining in the basic open-hearth, a steel is made which contains about 10 per cent of the original chromium present in the ores, together with the greater part of the nickel.

In other words, about 90 per cent of the chromium is oxidized and slagged off in the basic open-hearth furnace. It is a simple matter to slag off all of the chromium if desired, but the steel companies making this material desire to conserve all of that element possible because of the high qualities which it contributes to the steel.

They are able to turn out a very superior product, by virtue of the nickel and chromium which these ores retain, and find a ready market for it in many lines where steel having a combination of high strength and good ductility is demanded; thus automobile steels and important parts of locomotives and railroad rolling stock are made of this material, which will have properties somewhat as follows:

Tensile strength	83,400 lb. per sq. in.
Elastic limit	62,500 lb. per sq. in.
Elongation in 2 in.	8.67 per cent
Reduction of area	49.53 per cent

After different heat treatment, the steel may have properties somewhat as follows:

Tensile strength	162,500 lb. per sq. in.
Elastic limit	152,000 lb. per sq. in.
Elongation in 2 in.	16.0 per cent
Reduction of area	56.0 per cent

or else:

Tensile strength	226,300 lb. per sq. in.
Elastic limit	190,300 lb. per sq. in.
Elongation in 2 in.	8 per cent
Reduction of area	32 per cent

This steel is used for many different purposes, such as crankshafts, axles, hatchets, axes and other tools, as well as springs. It is now being largely advocated for screw rods and it is said to be an excellent material for wood screws and other screws, and it can be worked with great ease.

It is difficult to see why one would desire to eliminate all the chromium from this steel, but if this be the case, there should be no difficulty in manipulating the open-hearth practice so as to oxidize it away.—*Engineering and Mining Journal.*

Hardware Men Will Meet

The twenty-second convention of the American Hardware Manufacturers' Association will be held in Nashville, Tenn., May 28, 29 and 30 in conjunction with the twenty-second annual convention of the Southern Hardware Jobbers' Association. The Hermitage hotel will be the headquarters for the manufacturers and the Toulane hotel for the jobbers. The general program calls for an open joint session of the associations, a joint session of the two executive committees and a reception at the Hermitage hotel on Tuesday, May 28, separate executive sessions of each association, card party for the ladies at the Country Club and a ball at the Hermitage Club on Wednesday, May 29, final executive sessions of each association, afternoon outing at the Hermitage, and a vaudeville theater party on Thursday, May 30.

Testing Society Adopts Many New Specifications

Report of the Proceedings of the Annual Meeting of the A. S. T. M.—Responsibility for Railroad Accidents Discussed

In his annual address before the American Society for Testing Materials, Dr. Henry M. Howe, retiring president, bitterly arraigned "the needless killing and maiming of our fellow-citizens on our great national highways, the railroads." He added that for needless killing there is a stronger word and pointedly stated that neither the Ten Commandments, as a whole, nor the sixth in particular, will budge. If there have been many preventable deaths and injuries as a result of railroad accidents, Dr. Howe suggested that all, even remotely responsible, should demand an investigation to ascertain their share of this responsibility. For the consideration of the society, the entire problem was summarized as follows:

"Is there a considerable number of rail breakages capable of prevention by means of better specification?"

"Can we contribute directly or indirectly toward bettering those specifications by directing attention to their present defects?"

At the annual meeting of the American Society for Testing Materials, held at the Hotel Astor, New York City, Thursday and Friday, March 28 and 29, the many recent accidents resulting from rail breakages was the topic urged for careful consideration, by the retiring president, Dr. Henry M. Howe. In his annual address, this subject was discussed as follows:

"We should inquire carefully whether we are in part responsible for the needless killing and maiming of our fellow-citizens on our great national highways, the railroads. For needless killing there is a stronger word. Neither the Ten Commandments as a whole, nor the sixth in particular, will budge.

"I am not in a position to know the merits of the case, or to say whether culpability actually exists anywhere, much less to apportion it. *But if what is said on apparently good authority is even approximately true, then the reason to believe that there are very many preventable deaths and injuries on our railroads is so strong as to demand investigation on the part of all even remotely responsible,* and to demand that those situated as we are should ask carefully whether we, too, are not in part responsible.

"For a preventable death, for a death which I can prevent but do not, I am accountable. In that I do not prevent it I permit it; my omission to prevent, my effective permission, determines the death. I am as responsible for my omissions as for my acts, if not before the law, certainly before God and man.

"We set up standards for rails. It is strongly suspected and at times asserted, that the breakage of these rails causes many needless deaths. If those rails are bought under our specifications, and if those specifications do not fully secure the very least attainable danger of breakage, we, as the experts on whose judgment these rails have been permitted, through their breakage, to kill our fellow men, are in a measure responsible. If the rails which imperil the lives of our fellows are bought not under our specifications, but under looser and improper ones, then certain questions loom up. Are we, because of our

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expert knowledge of the manufacture, testing, and uses of rails, in a position to inform ourselves as to whether such specifications fail to protect our fellows thoroughly, and thus actually doom some of them to death? Such insufficient specifications are pistol shots fired indeed into a crowd and aimed at no individual, but none the less carrying death, and carrying it with the knowledge and the permission of those who could prevent it if they would. Has not our voice the power to be heard? Is not our competence to form a true judgment recognized? If yes, if preventable practices are now continuing which are going to kill many men, practices the dangerous nature of which we are in a position to recognize and convincingly to expose; if, under these conditions we omit to exert our power of detection and exposure, shall we not be in a measure responsible for those future deaths, as I am responsible in part for the death of a drowning man to whom I fail to throw the life belt in my hand? Is it not our duty to do overtly what lies in our power to save the lives and protect the bodies of our fellows? To determine what acts would be most effective would require very careful consideration, and a knowledge which I manifestly lack. An offer, a tactfully insistent offer of our aid to the bodies whose legal duty it is to investigate and remove the supposed dangers, is a possible one, perhaps more promising than an independent investigation on our own part.

"It is idle to plead that the fault lies primarily elsewhere; that the railroads are in part to blame, and the traveling public in part, because of its inconsiderate demands for unsafe speed. My duty towards the drowning man is unaffected by his having come into the water through his own fault or that of another; it is unlessened by the apathy of the police and of the other onlookers. My duty is my duty. It depends solely on my own conditions and powers, and not on the faults of others.

"The question then seems to resolve itself into these: First, is there a considerable number of rail breakages capable of prevention by means of better

specifications? Second, can we contribute directly or indirectly toward bettering those specifications by directing attention to their present defects?"

International Specifications

On the subject of "Standard International Specifications", Dr. Howe spoke as follows:

"Since our last meeting an important and it is believed very favorable change has been made in the plan of campaign of those who seek to erect standard international specifications. At that time the step on which attention was most fixed was the so-called stamping plan, that certain important steel objects, well-fitted in their nature for forming the basis of international specifications should be chosen; that each of the more important producing countries should create, from the elements of its own current national specifications, a single representative national specification for each such object; and that the International Association for Testing Materials should then stamp on each of these standard national specifications its own certificate that that specification is well-fitted for use in export trade. The immediate purpose of this step was the simplification of the inevitably difficult and complex task of agreeing on a single international specification for each object. If we could create a small number of specifications thus standardized, each acceptable and familiar to the various manufacturers of one single country, we should thereby simplify greatly the problem of devising a single international specification which would differ in the least degree and in the least objectionable manner from each one of this small number of specifications. The simplest form of this problem thus reached would be, it was hoped, also the easiest.

"Recognizing the great merits of this certainly most attractive plan, some important parties in interest feared two things. First, that the agreement of the various manufacturers of a given nation on a single national specification would make them reluctant to accept in its place any other, even if that were an international one; that they would be more reluctant to give up a single clear national specification on which they had all agreed, than a mass of co-existing specifications, differing so confusingly that their very abandonment would be acceptable. Second, that the endorsement by so eminent a body as the International Association for Testing Materials of a series of individual national specifications would tend to give the impression that they were of equal merit, and that this false impression would give an improper advantage to the less stringent specifications, those which give the least protection to the buyers' interests.

"The propositions now prominently under consideration seem to avoid these difficulties. The most important step recommended is the adoption at an early day of standard international specifications, not indirectly through the preliminary development of single national specifications, but directly, for three important classes of materials, structural steel for ships, for bridges, and for buildings. The specifications for structural steel for ships recommended are those now common to the British Engineering Standard Committee and to Lloyds' Register, supplemented by the chemical requirements of the American Society for Testing Materials. For bridge steel the specifications recommended are those of the American Society for Testing Materials, which, as I am credibly informed, are practically identical with those of the American

DR. HENRY M. HOWE

Railway Engineering Association, the affiliations of which give to its specifications an importance of the very highest order. For building steel the specifications recommended are those of the American Society for Testing Materials, which are in general like its bridge steel specifications save that they permit the use of Bessemer steel, and set a higher phosphorus limit.

"The reception which these propositions have received is very encouraging, and leads one to believe that substantial progress in this very important direction has been made.

Characteristics of Testing Society

"The essential and very important difference between the works and ways of this society and those of the vast majority of other scientific and technical societies ought to be kept prominently before us. Of course, the ultimate purpose of all is supposed to be the benefit of mankind; but where others work indirectly, we work with a directness and immediate utility which stimulate our enthusiasm most highly. The chief work of most such societies is the increase and diffusion of knowledge by means of papers which set forth the results of special investigations made by their members. Many societies go so far as actually to prohibit, whether by written or by unwritten law, the direct service of the public through their own official acts. The energies even of those societies which do not thus set statutory limits to their usefulness are devoted chiefly to the indirect work of increasing and diffusing knowledge, and such direct action as they take is of very secondary importance.

Service of Mankind

"But from the beginning our chief purpose has been the direct and immediate service of mankind. We have always been a going business concern. We saw that a great work lay ready at our hands, that not only of facilitating trade, but for protecting the less well-informed buyer from the necessarily better informed maker, and conversely by protecting the self-respecting manufacturer from the competition of the unscrupulous, ever too-ready to prey on the ignorance or cupidity of the buyer. This we set out to do by using the expert knowledge of our members for the purpose of making standard specifications, standards of justice and reasonableness, to which all could appeal from the demands of the unreasonable and unscrupulous. We have created sieves which pass the wheat, but stop the chaff. The wonderful growth of the society and the great devotion of its members to its often arduous work are due in very large part to the importance of this our service to the public, and to our great leader, Dr. Dudley, to whose lofty character were added all the essentials of leadership in such an undertaking, tact, a sympathetic power of inspiring enthusiasm, self-evident justice and reasonableness, a broad and far-seeing comprehension of the needs and the possibilities of the work, and an intimate, profound, and wide knowledge of the details of specifying and testing."

To increase the efficiency of the work of the society, Dr. Howe made the following recommendation:

First—The sub-division of the work of certain important committees through the creation of sub-committees, each working under its own chairman, yet so related that the knowledge and wisdom of the whole committee are brought to bear in scrutinizing the work of those sub-committees before it is laid before the society.

Second—Perfecting the form of the

specifications drawn up by the various committees, and detecting gaps and other defects in them, by submitting them to a committee charged with this special work, and therefore bringing to it special skill and experience.

Third—The co-operation of certain committees with the corresponding ones in sister societies. This brings to each problem a wider point of view and additional knowledge.

Fourth—The co-operation of the national government, which is now to be represented not only on our executive committee, but also officially on several of our technical committees.

Report of Executive Committee

In its report, the executive committee directed attention to the fact that the present annual meeting was held three months earlier than is customary and with a view of not entrenching on the prospective Sixth Congress of the International Association for Testing Materials to be convened in New York, Sept. 3-7, the presentation of technical papers was deferred for the International Congress. The total membership at present is 1,430, a net gain of 48 during the last nine months. The report of the treasurer showed a cash balance of $6,725.57 on March 15, last, with no outstanding liabilities except $801.85, owing to the International Association for dues collected since Jan. 1, 1912. Since the last annual meeting, the American membership in the International Association has increased from 473 to 594.

Changes in By-Laws

Changes in the by-laws, approved at the opening session of the annual meeting on Thursday morning and which will be submitted for final approval to the entire membership follow:

The society shall consist of junior members, members and honorary members. Heretofore there has been no provision for the election of honorary members. It is provided that an honorary member shall be a person of widely recognized eminence in some part of the field which the society aims to cover, and the number of such members shall not exceed ten; they are to be elected only by the unanimous vote of the executive committee.

A second vice president will hereafter be elected and the two vice presidents and the secretary and treasurer shall hold office for two years.

The executive committee is to consist of these officers and eight members, four being by letter ballot at each annual meeting. The presidents, two vice presidents and the members of the executive committee shall be ineligible for re-election to the same office until at least one full term shall have elapsed after the end of their respective terms.

The officers and members of the executive committee to hold office under the revised by-laws, follow:

To hold office for one year: The president elected this year (1912), the second vice president, to be appointed by the executive committee, and the following members of the present executive committee: W. A. Bostwick, Robert W. Hunt, Richard Moldenke and William R. Webster.

To hold office for two years: The first vice president elected this year, the secretary and treasurer elected this year, the three members of the executive committee elected this year, and a fourth member to be appointed by the executive committee.

Form of Specifications

Edgar Marburg, chairman of committee E-5, presented an elaborate report on "Rules Governing the Form, But Not the Substance of Specifications", which was referred to letter ballot for final adoption. The regulations were prepared with the understanding that the technical committees shall make an earnest effort to comply with their provisions. The rules cover the arrangement, lettering and numbering of materials; titles of standard specifications and the form and sequence of the sub-titles; units of measurements, typography, standard terms, abbreviations, spelling, etc.

Election of Officers

Prior to the adjournment of the opening session, the result of the election of officers for the ensuing year was announced as follows:

President, Robert W. Hunt, Robert W. Hunt & Co., Chicago.

Vice president, A. W. Gibbs, general superintendent of motive power, Pennsylvania railroad, Altoona, Pa.

Secretary and treasurer, Edgar Marburg, Philadelphia.

For membership on the executive committee, J. B. Lober, president Vulcanite Portland Cement Co., Philadelphia; A. A. Stevenson, vice president Standard Steel Works Co., Philadelphia, and S. W. Stratton, director United States Bureau of Standards, Washington.

Steel Reinforcing Bars

A heated discussion was precipitated by the change proposed by the committee on standard specifications for steel in the specification for steel reinforcing bars. Section 1 of these specifications now provides that the steel may be made by either the Bessemer or open-hearth process and the bars shall be rolled from billets. The change proposed in this section follows: "Bars shall be rolled from new billets. No re-rolled material will be accepted." This recommendation entirely eliminated reinforcing bars rolled from steel rails and representatives of these mills construed this in the light of the official disapproval of their product by the American Society for Testing Materials. On the other hand, members of the committee who proposed this change said that the specification covered only reinforcing bars rolled from new steel and it was only for the purpose of preventing the application of these specifications to bars rolled from rails that the change was suggested.

Edward Hughes, vice president of the Franklin Steel Co., Franklin, Pa., and president of the Rail Steel Bar Manufacturers' Association, presented the case of the mills engaged in the production of reinforcing bars from rails. He said that the members of the association of which he is the head have a capacity for rolling annually 200,000 tons of bars from rail steel and added that this material is being used extensively and satisfactorily. He emphatically protested against the methods pursued by the committee on standard specifications for steel, particularly in view of the fact that he had received no notices of the committee meetings to consider this subject prior to the one held Feb. 23, when he was informed that he had no status before the committee and was further advised that nothing could be done that would result in a change of the committee's decision before the elapse of another year. Mr. Hughes contended that the manufacturers of reinforcing bars should have been permitted to present specifications covering their own material before the adoption of the final recommendation.

Chairman Webster Replies

William R. Webster, chairman of the committee on specifications for steel, in his reply, stated that the specifications are in harmony with all other standards issued by the society. He was agreeable to the appointment of three representatives of makers of rail steel reinforcing bars to the committee of the society for the further consideration of these specifications, but he did not believe that a material that varied as widely as 50,000 pounds per square inch in tensile strength should be considered under the existing standard for reinforcing bars.

W. H. Woodcock, consulting engineer of Buffalo, who represented the rail steel reinforcing bar mills, contended that the variation in tensile strength, as given by Mr. Webster, was entirely too high, and while the

extremes of variation noted in many tests ranged from 80,000 to 119,000 pounds, the average variation was not more than 20,000 pounds. He insisted that there was no valid reason why these bars should not be recognized as a good building material, particularly as it is generally admitted by metallurgists that the quality of steel is improved by repeated rolling.

Society's Unprejudiced Position

Prof. Edgar Marburg said that it is well known that rail steel reinforcing bars are being extensively employed by eminent engineers for important work; yet, on the other hand, he contended that the society could not set aside, for one year, a specification in use. He deplored the possibility of exploiting the specifications, in their changed form, to the commercial disadvantage of the rail steel bar makers and offered a resolution with reference to the change in Section 1 in the Standard Specification for Steel Reinforcing Bars, to the effect that it was the expressed understanding of the American Society for Testing Materials that the new clause was not to be construed as being prejudicial to any other material not covered by the specifications. Prof. Marburg's motion was seconded by Mr. Hughes and after an unsuccessful effort to table the proposed change in the form of the specifications, the change with the Marburg resolution was adopted and referred to the society for letter ballot.

New Specifications for Steel Products

Fifteen new and revised specifications were submitted for the approval of the society by committee, A1 on standard specifications for steel. Never before in the history of the organization has such a comprehensive report been submitted and the work is indicative of the growing importance and expanding influence of the society's standards. The report was presented by William R. Webster, chairman, who stated that during the year the membership of the committee has been increased to 70 and the work has been distributed among numerous sub-committees, each consisting of members selected especially for their qualifications for effective service in the respective fields of the various sub-committees which have been created in connection with specifications for the following materials:

1. Steel rails and splice bars. (a) Bessemer rails; (b) open-hearth rails; (c) girder rails, and (d) splice bars.
2. Structural steel. (a) For bridges —1—carbon steel; 2—nickel steel. (b) For buildings.
3. Structural steel for ships.
4. Open-hearth boiler plate and rivet steel.
5. Steel reinforcing bars.
6. Steel axles. (a) Car and tender truck axles; (b) driving and engine axles—1—carbon steel; 2—nickel steel. (c) Heat-treated axles; (d) cold-rolled axles.
7. Rolled steel wheels and tires. (a) Wheels for engine truck, tender and passenger railway service; (b) wheels for freight car service; (c) tires.
8. Steel forgings.
9. Steel castings.
10. Steel tubing.
11. Automobile steels.
12. Locomotive materials. (a) Boiler and firebox steel; (b) boiler rivet steel; (c) annealed steel forgings; (d) lap-welded and seamless steel boiler tubes and safe ends; (e) steel shapes, universal mill plates and bars.
13. Steel forging blooms, billets and slabs.

The new specifications presented included the following for locomotive materials:

1. Boiler and firebox steel.
2. Boiler and rivet steel.
3. Annealed steel forgings.
4. Lap-welded and seamless steel boiler tubes and safe ends, 2½ inches outside diameter and under.
5. Steel shapes, universal mill plates, and bars.

The specifications for other materials included:

6. Forged and rolled, forged, or rolled solid steel wheels for engine truck, tender and passenger railway service.
7. Forged and rolled, forged, or rolled solid steel wheels for freight car service.
8. Structural nickel steel.
9. Automobile carbon and alloy steels.
10. Open-hearth steel girder and high tee rails.
11. Cold-rolled steel axles.

Specifications for Steel Castings

The limits for tensile strength in the standard specifications for steel splice bars were changed from "54,000 to 64,000" to "55,000 to 65,000" pounds per square inch. Numerous changes also were made in the specifications for heat-treated carbon-steel axles, shafts and similar objects and numerous changes were made in the specification for steel castings, which are as follows:

Process of Manufacture

The section relating to the process of manufacture was changed to include so-called "converter steel," which does not run as high in phosphorus as ordinary grades of Bessemer steel.

Annealing is specified only for castings for which there are physical requirements, as it is often a detriment in other cases on account of warping, making the castings too soft or unnecessary expense.

Chemical Properties

The maximum limit for carbon, for castings not subject to physical tests, was reduced from 0.40 to 0.30, at the request of certain members representing railroad interests.

A variation of 20 per cent for check analyses of phosphorus and sulphur was provided for, since this is absolutely necessary in order that the specifications may not be unduly burdensome to western foundries, which have great trouble in securing low phosphorus, and to eastern foundries, which have similar trouble with respect to sulphur. It was specified that the drillings from annealed castings shall be taken at least ¼ inch from the surface, on account of the reduction in carbon and the increase in sulphur sometimes caused in the skin of castings by annealing.

Physical Properties

It was specified that all test specimens shall be cut from test bars, which shall, if possible, be attached to the casting. On account of the great variations in size and design, it is impossible to state more definitely where these bars shall be attached than that the manufacturer and purchaser shall agree on their location. It is unfair to cut tests from the sinkhead as provided in the present specifications.

The tensile strength and yield point for hard castings were lowered slightly to make an even range of figures and to bring them into better accord with the specified elongation and reduction of area.

The percussive test was omitted, as it is practically obsolete. In addition to being expensive, it does not meet the requirements.

A clause has been inserted to provide for additional tests if the tests fail on account of flaws in the test pieces. A similar clause exists in Lloyd's and other specifications.

Discussion of Bending Tests

When the steel casting specifications were submitted for adoption, it was suggested that a clause be inserted covering bend tests which may be made by pressure or by blows, at the option of the manufacturer. This was opposed by many users of steel castings who insisted that these tests should be made at the option of the purchaser instead of the manufacturer. It was contended by the representatives of steel foundries that it was eminently unfair to them to make optional with the purchaser to specify the nature of the bend test, in view of the fact that some plants may be equipped for making only one of the two tests. The consumers, however, succeeded in carrying their amendment, and Secretary Marburg then suggested that the clause regarding bending tests at the option of the purchaser, be inserted in all of the specifications adopted by the society. This recommendation was re-

ceived with such pronounced disapproval that the motion was withdrawn without being submitted to a vote. Before the final adoption of the steel casting specification, the entire clause prescribing the nature of the bending test was stricken out. A representative of the Steel Founders' Society said that the bending test by blows could not be applied successfully to steel castings. Another clause also was adopted which provides that castings offered for inspection should be absolutely clean.

Rejected Material

In all of the specifications, the clauses referring to rejected material were changed to permit the purchaser five instead of two working days in which to make a report on rejected stock to the manufacturer. On the other hand, the disposition of this material is optional with the manufacturer. Heretofore the specifications provided for the return of the rejected material to the manufacturer, who was compelled to pay the return freight.

The etching solution specified for the various proposed standards is composed of 50 per cent water, 25 per cent concentrated sulphuric acid and 25 per cent concentrated hydrochloric acid. As there are many etching solutions in use, the one recommended was eliminated from the specification, but the test specimens are to be etched for a sufficient period to develop the structure.

Heat-Treated Material

Numerous changes were made in the specifications for heat-treated carbon steel axles, shafts and similar objects. A group of objects to be reheated was defined as a quenching charge and the term "treating-plant heat" was eliminated. A new clause also was inserted covering tension and bend tests.

Before the adoption of the boiler rivet steel specification, numerous changes were made. The sulphur limit was increased from 0.04 to 0.045 per cent in the chemical composition of rolled bars from which rivets are made. It also was decided that no tension tests of rivets will be made, if tests on bar stock have met the requirements. However, if the rivets are to be subjected to physical tests, three of each size of each lot shall be subjected to the bending and flattening test. It is provided that the rivet shanks shall bend cold through 180 degrees flat on themselves without fracture on the bent portion.

Protest was made against the phosphorus limit in the specification for annealed steel forgings and an unsuccessful effort was made to change it from 0.05 to 0.04 per cent. These specifications were adopted as reported, with only one minor change. So numerous were the corrections and changes in the specifications for lap-welded and seamless steel boiler tubes that these will have to be re-written. After the incorporation of the changes, the proposed standard was adopted. Changes likewise were made in the specifications for steel shapes, universal mill plates and bars for locomotive use.

Rolled Steel Wheels

The adoption of specifications for rolled steel wheels met with considerable opposition from representatives of electric and steam roads. In the title of the standard for passenger service the word "motor" was eliminated, as well as all clauses referring to motor railway service. It was also contended that the specifications as drawn might eliminate crucible and alloy steel wheels and the material was then more clearly defined as carbon steel. The original rolled steel wheel specifications were published in THE IRON TRADE REVIEW, July 6, 1911. In the new specifications, as adopted, the carbon range was reduced to 0.20 per cent and the manganese to 0.25 per cent. The requirements for silicon were made 0.15 to 0.35 per cent for acid and 0.10 to 0.30 per cent for basic steel. The height of flange shall not vary more than ⅛ inch over that specified and requirements for minimum thickness of hub for bores over 7 inches in diameter were added. Black spots deeper than 1-16 inch will not be permitted in the rough bore within 2 inches of either face of the hub. The eccentricity between the tread at its center line and the rough bore has been changed from 1-16 to 3-64 inch.

Structural Nickel Steel

The specifications for structural nickel steel adopted are substantially an adaptation of the specifications prepared in connection with the design of the municipal bridge across the Mississippi river at St. Louis.

The specifications for automobile carbon and alloy steels, which were favorably acted upon with only a few minor changes, were prepared by a sub-committee under the chairmanship of Albert Ladd Colby. This committee consisted of 20 members, numerically balanced between the principal producers and consumers of American automobile steels. With few exceptions, the chemical requirements of these specifications are identical with those in the specifications for automobile steels recommended by a committee of the Society of Automobile Engineers. The various automobile steels considered in these specifications include carbon, nickel, nickel-chromium, nickel-chromium-vanadium, chromium, chromium vanadium, silico-manganese and valve metals.

Other specifications recommended by the committee on standard specifications for steel which were favorably acted upon and referred to the society for letter ballot include standards for cold rolled steel axles and open-hearth steel girder and high tee rails.

Steel Rail Specifications

Chairman W. R. Webster announced that his committee had not considered a revision of the society's standard steel rail specifications inasmuch as this problem is being considered by several other organizations. However, the steel committee of the Testing Society will give its hearty support to the work already undertaken and will aid in every possible way to bring about an early solution of the steel rail problem.

Wrought Iron Specifications

Revised specifications for staybolt iron and new standards for engine-bolt iron, refined wrought iron bars and iron locomotive boiler tubes were presented by Committee A-2, which has been organized less than a year. During the ensuing year, specifications will be prepared for chain iron, rivet iron and iron rivets, hammered iron sections and plates and shapes.

In view of the large percentage of 50,000-pound, 30 per cent elongation iron that is used at the present time for staybolt iron, the committee considered the advisability of adopting a specification including two grades of iron, one grade the same as that covered by the present specifications and the other a 50,000-pound, 30 per cent elongation iron. After careful consideration, however, it was concluded that the specification for the two grades of iron would result in confusion, and it was decided to recommend a specification of a character that the consumer of the 48,000-pound, 28 per cent elongation iron could adopt without a material increase in cost, while consumers of 50,000-pound, 30 per cent iron could use it without feeling that they were sacrificing quality. The revised specifications nearly measure up to the requirements for English staybolt iron.

The specifications for engine bolt iron are new and the process of manufacture prohibits the use of iron

scrap or steel in the production of this material; local mill crop ends, however, are not considered scrap. Material used for case-hardened finished bolts should be made from newly-puddled iron.

The wrought iron bar specifications cover a grade of iron suitable for general forging, smithing and constructive purposes. These specifications do not cover merchant iron, however, as this material is not sold by specification. The specification for locomotive iron boiler tubes is practically a copy of the standard adopted by the Master Car Builders' Association. With a few minor changes, all of the specifications presented by the committee on standard specifications for wrought iron were adopted and referred to the society for letter ballot.

Coke Specifications

The committee appointed to prepare specifications for coke reported that it was the concensus of opinion of the members that the state of the art at present precluded the formulation of standards for bee-hive or by-product coke in any one locality. Existing methods of sampling and of making physical tests are now being investigated by a sub-committee and the question of chemical analyses of coke will be discussed with a committee of the American Foundrymen's Association and the American Chemical Society.

A suggestion to refer all of the specifications adopted by the society to counsel for the incorporation of the proper legal phraseology was referred to the executive committee.

Waterproofing Concrete

As a result of recent investigations, the committee on waterproofing concrete reported that the most promising solution of the problem lay in obtaining dense concrete through purely mechanical means. This can be accomplished either by the use of more finely ground cementitious material than is normally furnished, or by richer concrete mixes than ordinarily used. The committee directed attention to the dangers of permeable concrete which is attacked through the hastening of chemical action therein by the presence of electric currents carried by the percolating water which ultimately produces disintegration and so-called rotting of the concrete. The report stated further, that in reinforced concrete work, unless the metal parts of the structure are thoroughly bonded together, and any stray electric currents are properly collected and safely carried away, it will be only a question of time until final collapse must occur. Leonard Waldo, chairman of committee E-3, presented a progress report on the term "modulus of electricity."

Captain Robert W. Hunt, the newly elected president of the American Society for Testing Materials, was unable to attend the meeting, having been detained in Chicago by urgent business. The attendance was approximately 300 and a tremendous volume of business was transacted during the two-day session.

Following are some of the new and more important revised specifications:

Standard Specifications for Engine Bolt Iron

Manufacture

1.—The iron shall be made wholly from puddled iron and shall be free from any admixture of iron scrap or steel.

2.—Iron Scrap.—This term applies only to foreign or bought scrap and does not include local mill products free from foreign or bought scrap.

Physical Properties and Tests

3.—The iron shall conform to the following requirements as to tensile properties: Tensile strength, pounds per square inch, 50,000-54,000; yield point, pounds per square inch, 0.6 tens. str.; elongation in 8 inches, per cent, not less than 25; reduction of area, per cent, not less than 40.

The yield point shall be determined by the drop of the beam of the testing machine. The speed of the crosshead of the machine shall not exceed 1½ inches per minute.

4.—The following modifications will be allowed in the requirements as to tensile strength specified in Section 3:

(a) For material over 1.5 and under 5 square inches in section, a deduction of 1,000 from the specified tensile strength will be allowed.

(b) For material 5 square inches or over in section, a deduction of 2,000 from the specified tensile strength will be allowed.

5.—(a) Cold-bend Tests.—The test specimen shall bend cold through 180 degrees around a pin the diameter of which is equal to the diameter of the specimen, without fracture on the outside of the bent portion.

(b) Hot-bend Tests.—The test specimen, when heated to a bright cherry red, shall bend through 180 degrees flat on itself without fracture on the outside of the bent portion.

(c) Nick-bend Tests.—The test specimen, when nicked 25 per cent around with a tool having a 60-degree cutting edge, to a depth of not less than 8 nor more than 16 per cent of the diameter of the specimen, and broken, shall show a wholly fibrous fracture.

(d) Bend tests may be made by pressure or by blows.

6.—The cross-section of the test specimen shall be ground or polished, and etched for a sufficient period to develop the structure. This test shall show the material to be free from steel.

7.—(a) Tension test specimens shall be of the full section of material as rolled, if possible. Otherwise, the specimens shall be taken from the materials as rolled; for bars 2½ inches or less in diameter the axis of the specimen shall coincide with the axis of the bar; for bars over 2½ inches in diameter, the axis of the specimen shall be located at any point one-half the distance from the center to the surface and shall be parallel to the axis of the bar; and the specimens shall be turned to a diameter of 1 inch for a length of at least 9 inches with enlarged ends.

(b) Bend and etch test specimens shall be of the full section of material as rolled; except that for bars over 1½ inches in diameter, the cold bend test specimen may be machined to not less than 1 square inch in section.

8.—Bars of one size shall be sorted into lots of 100 each. Two bars shall be selected at random from each lot or fraction thereof, and tested as specified in Sections 3 and 5; but only one of these bars shall be tested as specified in Section 6.

If any test specimen from either of the bars originally selected to represent a lot of material, contains surface defects not visible before testing but visible after testing, or if a tension test specimen breaks outside the middle third of the gage length, one retest from a different bar will be allowed.

Bars must be stamped or marked as designated by the purchaser.

Permissible Variations in Gage

9.—The bars shall conform to the standard limit gages as adopted by the Master Car Builders' Association in 1883.

Finish

10.—The bars shall be smoothly rolled and free from slivers, depressions, seams, crop ends, and evidences of being burnt.

Inspection and Rejection

11.—(a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the wheels are being furnished in accordance with these specifications. Tests and inspection at the place of manufacture shall be made prior to shipment.

(b) The purchaser may make the tests to govern the acceptance or rejection of material in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

12.—(a) If either of the test bars selected to represent a lot shall fail to meet the requirements specified in Sections 3, 4, 5 and 6, the lot will be rejected.

(b) Bars which develop defects in forging or machining will be rejected and the manufacturer notified.

Standard Specifications for Locomotive Boiler Rivet Steel

Requirements for Rolled Bars
Manufacture

1.—The steel shall be made by the open-hearth process.

Chemical Properties and Tests

2.—The steel shall be made by the open-ing requirements as to chemical composition:

	Per cent.
Manganese	0.30 to 0.50
Phosphorus	not over 0.04
Sulphur	not over 0.045

3.—To determine whether the material conforms to the requirements as to chemical

composition specified in Section 2, an analysis shall be made by the manufacturer from a test ingot taken during the pouring of each melt. A copy of this analysis shall be given to the purchaser or his representative.

A check analysis may be made by the purchaser from finished material representing each melt, and this analysis shall conform to the requirements specified in Section 2.

Physical Properties and Tests

4.—The steel shall conform to the following requirements as to tensile properties:

Tensile strength, pounds per square inch, 45,000-55,000; yield point, pounds per square inch, 0.5 tensile strength; elongation in 8 inches, per cent, 1,500,000; (But need not exceed 30 per cent.)

The yield point shall be determined by the drop of the beam of the testing machine.

5.—(a) Cold-bend Tests.—The test specimen shall bend cold through 180 degrees flat on itself without fracture on the outside of the bent portion.

(b) Quench-bend Tests.—The test specimen, when heated to a light cherry red as seen in the dark (not less than 1,200 degrees Fahr.,) and quenched in water the temperature of which is between 80 and 90 degrees Fahr., shall bend through 180 degrees flat on itself without fracture on the outside of the bent portion.

(c) Bend tests may be made by pressure or by blows.

6.—The tension and bend test specimens shall be of full-size section as rolled.

7.—Two tension, two cold-bend, and two quench-bend tests shall be made from each melt.

Permissible Variation in Gage

8.—The bars shall be round within 0.01 inch and not vary more than 0.01 inch in gage.

Finish

9.—The finished bars shall be free from injurious seams, slivers, flaws, and other defects, and shall have a workmanlike finish.

Marking

10.—Rivet steel shall be shipped in securely fastened bundles, with the melt number stamped on an attached metal tag.

Inspection

11.—The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the material is being furnished in accordance with these specifications. All tests and inspections shall be made at the place of manufacture prior to shipment, and shall be so conducted as not to interfere unnecessarily with the operation of the works.

Requirements for Rivets

This section of these specifications will be materially changed as no tension tests of rivets shall be made if the tests on the bar stock have met the requirements. If a test is necessary, however, three rivets of each size and of each lot shall be subjected to the bending and flattening test. The rivet shanks must bend cold through 180 degrees, flat on themselves, without fracture on the outside of the bent portion.—Editor.

Revised Standard Specifications for Steel Castings

1.—These specifications cover two classes of castings, namely:

Class A, ordinary castings for which no physical requirements are specified.

Class B, castings which are subject to physical tests. These are of three grades: hard, medium and soft.

2.—Patterns shall be made so that sufficient finish is allowed to provide for all variations in shrinkage, and shall be painted three different colors to represent metal, cores and finished surfaces. It is recommended that core prints shall be painted black and finished surfaces red.

Manufacture

3.—The steel shall be made by the open-hearth, crucible, or by any other approved process.

4.—Class A castings need not be annealed unless so specified.

Class B castings shall be annealed by allowing them to become cold, reheating them to the proper temperature to refine the grain, and allowing them to cool slowly.

Chemical Properties and Tests

5.—The steel shall conform to the following requirements as to chemical composition:

Class A.

	Per cent.
Carbon	not over 0.30
Phosphorus	not over 0.08
Sulphur	....

Class B.

	Per cent.
Carbon	....
Phosphorus	not over 0.05
Sulphur	not over 0.05

6.—To determine whether the material conforms to the requirements as to chemical composition specified in Section 5, an analysis shall be made by the manufacturer from a test ingot taken during the pouring of each melt. Drillings for analysis shall be taken not less than ¼ inch beneath the surface of the test ingot. A copy of this analysis shall be given to the purchaser or his representative.

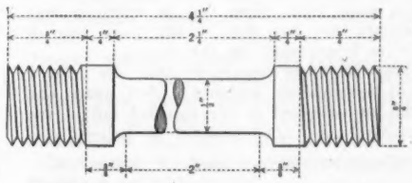

FIG. 1—TENSION TEST SPECIMEN

A check analysis of Class B castings may be made by the purchaser from a broken tension or bend test specimen, in which case an excess of 20 per cent above the requirements as to phosphorus and sulphur specified in Section 5 will be allowed. If the specimen has been annealed, the drillings for analysis shall be taken not less than ¼ inch beneath the surface.

Physical Properties and Tests

7.—The steel for each grade of Class B castings shall conform to the following minimum requirements as to tensile properties:

	Hard.	Medium.	Soft.
Tensile strength, pounds per square inch	80,000	70,000	60,000
Yield point, pounds per square inch	36,000	31,500	27,000
Elongation in 2 inches, per cent	15	18	22
Reduc. of area, per cent	20	25	30

The yield point shall be determined by the drop of the beam of the testing machine.

8.—The test specimen shall bend cold through 120 degrees for soft castings and 90 degrees for medium castings, around a 1-inch pin, without fracture on the outside of the bent portion.

9.—In the case of small or unimportant castings, a test to destruction on three castings from a lot may be substituted for the tension and bend tests. This test shall show the material to be ductile, free from injurious defects, and suitable for the purpose intended. A lot shall consist of all castings from the same melt, annealed in the same furnace charge.

10.—(a) Test bars shall be attached to Class B castings weighing 500 pounds or over, provided the design of the castings will permit. If the castings weigh less than 500 pounds, or are of such a nature that test bars cannot be attached, two test bars shall be cast to represent each melt; or the quality of the castings shall be determined by tests to destruction as specified in Section 9. All test bars shall be annealed with the castings they represent.

The manufacturer and purchaser shall agree whether test bars can be attached to castings, and also on the location of the bars on the castings and the method of casting unattached bars.

(b) Tension test specimens shall be of the form and dimensions shown in Fig. 1.

Bend test specimens shall be 1 by ½ inch in section.

11.—One tension and one bend test shall be made from each melt. If any test specimen shows defective machining, or develops flaws, or if a tension test specimen breaks outside the gage length, it may be discarded; and the manufacturer and the purchaser or his representative shall agree upon the selection of another specimen in its stead.

Workmanship and Finish

12.—The castings shall substantially conform to the sizes and shapes of the patterns, and shall be made in a workmanlike manner. They shall be free from injurious defects.

Castings offered for inspection shall not be painted or covered with any substance that will hide defects, nor rusted to such an extent as to hide defects.

Inspection and Rejection

13.—The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the material is being furnished in accordance with these specifications. All tests and inspection shall be made at the place of manufacture prior to shipment, and shall be so conducted as not to interfere unnecessarily with the operation of the works.

14.—Castings which show injurious defects before or after machining will be rejected and the manufacturer notified.

Standard Specifications for Open-Hearth Steel Girders and High Tee-Rails

1.—The steel shall be made by the open-hearth process. The entire process of manufacture and testing shall be in accordance with the best standard practice, and special attention shall be given to the following specifications:

2.—(a) A test ingot shall be cast, while each melt is being poured, from steel from the middle of the melt.

(b) No bled ingots shall be used.

(c) Ingots or blooms which show the effects of injurious treatment shall be discarded.

3.—The steel of which the rails are rolled shall conform to either of the following limits in chemical composition:

	Class A. Per cent.	Class B. Per cent.
Carbon	0.60 to 0.75	0.70 to 0.85
Manganese	0.60 to 0.90	0.60 to 0.90
Silicon	not over 0.20	0.20
Phosphorus	not over 0.04	0.04

4.—(a) The maker shall furnish the railway inspector daily, prior to shipment, with the chemical analysis for each melt, covering the elements specified under Paragraph 3.

(b) Each analysis shall be made from drillings taken from the test ingot at not less than ⅛ inch beneath the surface.

(c) These analyses may be checked from time to time by the railway company's chemist, and the maker shall furnish, on request of the inspector, a portion of the test ingot or drillings therefrom for check analysis.

5.—(a) Sufficient material shall be discarded from the top of the ingot to obtain sound rails. Where the finished rails show piping they may be cut to shorter lengths until all evidence of this is removed.

(b) All metal from the top of the ingot, whether cut from bloom or rail, is the top discard.

6.—The letters "O. H.," the weight of the rail, the section number, the name of the maker and the year and month of manufacture shall be rolled in raised letters and figures on the side of the web, and the melt number shall be plainly shown on each rail where it will not be covered subsequently by the splice bars.

7.—(a) Rails on the hot beds shall be protected from water or snow, and shall be carefully manipulated to minimize cold straightening.

(b) The distance between the rail supports in the cold straightening presses shall not be less than 42 inches, except as may be necessary near the ends of the rails. The gag shall have rounded corners to avoid injury to the rail.

(c) Any rail injured in cold straightening, or showing gag marks therefrom, shall be rejected.

(d) "Lumpy"—that is, short-kinked or wavy—rails shall be rejected.

8.—(a) Rails shall be smooth on the head, straight in line and surface without any twists, waves or kinks, particular attention being given to having the ends without kinks or drop. The ends shall be milled square laterally and vertically, but the base may be undercut 1-32 inch.

(b) All burrs or flow caused by drilling or sawing shall be carefully removed.

9.—Circular holes for joint bolts, bonds and tie rods shall be drilled to conform accurately in every respect to the drawing and dimensions furnished by the purchaser. In Class A rail, however, the tie rod holes may be punched.

10.—(a) The section shall be as shown in detail upon the attached plan, and the cold templet of the manufacturer shall accurately conform to the specified section, and shall at all times be maintained perfect.

(b) The section of rail shall conform as accurately as possible to the templet and any variation therefrom shall be within the following limits: Height 1/64 inch under, 1/32 inch over; overall width of head and tram, ⅛ inch under or over, provided that said variation will not affect the gage line by more than 1/32 inch; width of base ⅛ inch under, except that in flanges 6½ inches wide, 3/16 inch, and in flanges 7 inches wide, ¼ inch variation will be allowed. When necessary on account of form of track construction, and notice to that effect is given to the manufacturer, special care shall be taken to maintain the proper position of the gage line with respect to the outside edge of the base.

(c) No variation will be allowed which will affect the fit of the splice bars.

(d) The base of the rail shall be at right angles to the web, and shall not have a convexity greater than 1/32 inch.

11.—(a) The weight of the rails per yard as specified in the order shall be maintained as nearly as possible after complying with Paragraph 10, and the aggregate of the order shall not vary more than ½ per cent from the specified weight.

(b) Payments shall be based on actual weights.

12.—(a) The lengths of rails at a temperature of 60 degrees Fahr. shall be 60 and 62 feet for those sections in which the weight per yard will permit, unless otherwise specified.

Ten per cent of the entire order will be accepted in shorter lengths, varying by even feet down to 40 feet. All rails shall be paired as to length before shipment.

(b) A maximum variation of ¼ inch over and under the specified lengths will be allowed.

13.—The drop-testing machine will be of the type recommended by the American Railway Engineering Association.

14.—(a) Three rails from the top of the ingots shall be selected by the inspector from each heat, from two of which a test specimen not less than 4 nor more than 6 feet in length shall be cut.

(b) The test specimen shall be placed head upwards on supports 3 feet apart and shall be subjected to the specified fall of the Standard tup (2,000 pounds) as follows:

Weight of rail per yard.	Fall in feet. Class A	Class B
Rails weighing over 100 pounds per yard or over 7 inches in depth	15	12
Rails weighing 100 pounds or less per yard, 7 inches or less in depth	13	10

(c) The temperature of the test specimens, when tested, shall not be less than 60 degrees Fahr., nor greater than 120 degrees Fahr.

(d) The testing shall proceed concurrently with the operation of the mill.

(e) Drop tests shall be made of the two test specimens from each melt. Should both specimens withstand the test, all the rails from the melt which they represent shall be accepted. Should one of the two test specimens fail, the third rail selected shall be tested, and if two of the three specimens fail, all rails from the melt which they represent shall be rejected.

(f) The report of the drop tests shall state the atmospheric temperature at the time the tests were made.

15.—No. 1 rails shall be free from injurious defects and flaws of all kinds.

16.—(a) Rails which are rough on the head or which by reason of surface or other imperfections are not classed as No. 1 rails will be considered No. 2 rails, providing they do not in the judgment of the inspector contain imperfections in such a manner and of such character in any individual rail as to render such rail unfit for recognized No. 2 rail uses, and providing such rails meet the requirements of Paragraph 10 of this specification.

(b) Rails shall not be accepted as No. 2 rails having flaws of more than ¼ inch in depth in the head or more than ½ inch in depth in the base.

(c) No. 2 rails will be accepted to the extent of 10 per cent by weight of the entire order.

17.—Both ends of all short-length No. 1 rails shall be painted green.

Both ends of all No. 2 rails shall be painted white and shall have two heavy center punch marks on the web of the rail at such a distance from both ends that they will not be covered by the joint plates.

18.—(a) All rails shall be loaded in the presence of the inspector, and shall be handled in such a manner as not to bruise their flanges or cause other injuries.

(b) Rails of each class shall be placed together in loading.

19.—The inspector representing the purchaser shall have free entry to the works of the manufacturer at all times while his contract is being executed, and shall have all reasonable facilities afforded him by the manufacturer to satisfy him that the rails are being made in accordance with the terms of the contract. All tests and inspection shall be made at the place of manufacture prior to shipment, and shall be so conducted as not to interfere unnecessarily with the operation of the mill.

Standard Specifications for Refined Wrought Iron Bars

Manufacture

1.—Refined wrought iron bars shall be made wholly from puddled iron, and may consist either of new muck bar iron or a mixture of muck bar iron and scrap, but shall be free from any admixture of steel.

Physical Properties and Tests

2.—The iron shall conform to the following requirements as to tensile properties:

Tensile strength, 48,000 pounds per square inch; yield point, 25,000 pounds per square inch; elongation in 8 inches, minimum, 22 per cent.

The yield point shall be determined by the drop of the beam of the testing machine. The speed of the crosshead of the machine shall not exceed 1½ inches per minute.

3.—Twenty per cent of the test specimens representing one size may show tensile strengths 1,000 pounds per square inch below or 5,000 pounds per square inch above that specified in Section 2; but no specimen shall show a tensile strength less than 45,000 pounds per square inch.

4.—For flat bars which have to be reduced in width, a deduction of 1,000 pounds per square inch from the tensile strength specified in Sections 2 and 3 will be allowed.

5.—Twenty per cent of the test specimens representing one size may show the following percentages of elongation in 8 inches:

Round Bars.

	Per cent.
½ inch or over, tested as rolled	20
Less than ½ inch, tested as rolled	16
Reduced by machining	18

Flat Bars.

	Per cent
⅜ inch or over, tested as rolled	18
Less than ⅜ inch, tested as rolled	16
Reduced by machining	16

6.—(a) Cold-bend Tests.—The test specimen shall bend cold through 180 degrees without fracture on the outside of the bent portion, as follows: For round bars less than 2 square inches in section, around a pin the diameter of which is equal to the diameter of the specimen; for round bars 2 square inches or over in section and for all flat bars, around a pin the diameter of which is equal to twice the diameter or thickness of the specimen.

(b) Hot-bend Tests.—The test specimen, when heated to a temperature between 1,700 and 1,800 degrees Fahr., shall bend through 180 degrees without fracture on the outside of the bent portion, as follows: For round bars less than 2 square inches in section, flat on itself; for round bars 2 square inches or over in section and for all flat bars, around a pin the diameter of which is equal to the diameter or thickness of the specimen.

(c) Nick-bend Tests.—The test specimen, when nicked 25 per cent around for round bars, and along one side for flat bars, with a tool having a 60-degree cutting edge, to a depth of not less than 8 nor more than 16 per cent of the diameter or thickness of the specimen, and broken, shall not show more than 10 per cent of the fractured surface to be crystalline.

(d) Bend tests may be made by pressure or by blows.

7.—The cross-section of the test specimen shall be ground or polished, and etched for a sufficient period to develop the structure. This test shall show the material to be free from steel.

8.—(a) Tension and bend test specimens shall be of the full section of material as rolled, if possible. Otherwise, the specimens shall be machined from the material as rolled; the axis of the specimen shall be located at any point one-half the distance from the center to the surface of round bars, or from the center to the edge of flat bars, and shall be parallel to the axis of the bar.

(b) Etch test specimens shall be of the full section of the material as rolled.

9.—All bars of one size shall be piled separately. One bar from each 100 or fraction thereof will be selected at random and tested as specified.

If any test specimen from the bar originally selected to represent a lot of material, contains surface defects not visible before testing but visible after testing, or if the tension test specimen breaks outside the middle third of the gage length, one retest from a different bar will be allowed.

Permissible Variations in Gage

10.—(a) Round bars shall conform to the standard limit gages adopted by the Master Car Builders' Association in 1893.

(b) Flat bars shall not vary more than 2 per cent in either width or thickness from that specified.

Finish

11.—The bars shall be smoothly rolled and free from slivers, depressions, seams, crop ends, and evidences of being burnt.

Inspection and Rejection

12.—(a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the material is being furnished in accordance with these specifications. Tests and inspection at the place of manufacture shall be made prior to shipment.

(b) The purchaser may make the tests to govern the acceptance or rejection of material in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

13.—All bars of one size will be rejected if the test specimens representing that size fail to meet the requirements specified.

Standard Specifications for Cold-Rolled Steel Axles

Manufacture

1.—(a) The steel shall be made by the open-hearth or by any other approved process.

(b) All axles shall be cold-rolled to finished size from hot-rolled bars.

2.—A sufficient amount of discard shall be made from the top of each ingot to insure freedom from injurious piping and undue segregation.

Chemical Properties and Tests

3.—The steel shall conform to the following requirements as to chemical composition:

	Per cent.
Carbon	not over 0.40
Manganese	0.40 to 0.80
Phosphorus	not over 0.05
Sulphur	not over 0.05

4.—A check analysis shall be made from one axle representing each melt, and this analysis shall conform to the requirements specified in Section 3. Drillings shall be taken from a crop end, parallel to the axis, at any point one-half the distance from the center to the surface.

In addition to the complete analysis, a phosphorus determination may be made by the purchaser from each broken tension test specimen, and this determination shall conform to the requirements for phosphorus specified in Section 3.

Physical Properties and Tests

5.—The steel shall conform to the following minimum requirements as to tensile properties:

Tensile strength, pounds per square inch	70,000
Elastic limit, pounds per square inch.	60,000
Elongation in 2 inches, per cent.....	18
Reduction of area, per cent.....	35

The elastic limit shall be determined by means of an extensometer.

6.—The test specimen shall bend cold through 180 degrees around a 1-inch flat mandrel having a rounded edge of ½-inch radius, without fracture on the outside of the bent portion.

Bend tests may be made by pressure or by blows.

7.—Tension and bend test specimens shall be taken from the crop end of the axle; the axis of the specimen shall be located at any point one-half the distance from the center to the surface, and shall be parallel to the axis of the axle.

Bend test specimens shall be ½ inch square in section, and not over 6 inches in length.

8.—One tension and one bend test shall be made from each lot of 50 axles, or fraction, thereof, from each melt.

Workmanship and Finish

9.—The axles shall conform in sizes and shapes to the requirements given on the order of the purchaser or the drawing sent with it, and shall not vary more than 0.002 inch from the diameter specified. In centering, 60-degree centers with clearance drilled at point shall be used.

10.—The axles, either finished or plain, shall be straight and free from injurious seams, slivers, flaws and other defects, and shall have a workmanlike finish.

Marking

11.—The manufacturer's name, melt number, inspector's mark, and year, shall be legibly stamped on each axle. Unless otherwise indicated, these marks shall be stamped at about the middle of the length of the axle.

Inspection and Rejection

12.—(a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the axles are being furnished in accordance with these specifications. Tests and inspection at the place of manufacture shall be made prior to shipment.

(b) The purchaser may make the tests to govern the acceptance or rejection of material in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

(c) All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

13.—(a) Axles which show injurious defects while being finished by the purchaser, will be rejected and returned to the manufacturer, who shall pay return freight.

(b) Unless otherwise arranged, any rejection based on tests made in accordance with Section 12 (b) shall be reported within two working days from the receipt of samples.

14.—Samples tested in accordance with Section 12 (b), which represent rejected material, shall be preserved for two weeks from the date of the test report. In case of dissatisfaction with the results of the tests, the manufacturer may make claim for a rehearing within that time.

Swank's New Supplement to Directory

The Second Supplement to the Directory of iron and steel works issued by the American Iron and Steel Association, James M. Swank general manager, has just been put on the market. Because of the steady and rapid development of the iron and steel business in the country since the last Directory was issued in 1908, it has become imperative that the Association supplement the information contained therein with later information which has been placed before the public in the form of Supplements. The First brought the corrections down to 1910, and the Second, now issued, down to the close of 1911. The new Supplement contains a great variety of valuable information, including a complete list of the blast furnaces of the United States, and fills 80 well printed pages, bound to correspond with the Directory. It is announced that another supplement for 1912 will not be issued. The Second Supplement sells for $5; both Supplements will be sent for $10. Either or both may be secured through the Book Department of the Penton Publishing Co., Cleveland.

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The Interstate Commerce Commission and the Railways

The iron and steel world is scarcely less interested than the railway world in the message brought by the Hon. Charles A. Prouty, chairman of the Interstate Commerce Commission, to the railway managers assembled at last Thursday night's dinner of the Traffic Club of Pittsburgh. Chairman Prouty insists that the spirit of the commission is that of protecting railway investments, and that it is ready to grant permission to advance rates when such advances are necessary. Railway investments are vastly more secure than they were 15 years or more ago, because now the railways can fix and maintain rates, whereas then the rates were made by the large shippers and the small competing lines. As security increases, the interest rate decreases; it is a law of finance. This security, Mr. Prouty maintains, is destined to increase, from which it may be reasoned that if the railroads continue merely to earn their present rates upon investments, capital will be more and more attracted, and requisite extensions and improvements may, therefore, be made.

The people, Mr. Prouty insists, are going to fix rates in the future. It is a legislative, not a judicial act, and apparently he is quite opposed to the new Court of Commerce. The jurisdiction of the courts is only on the ground that a given act may be confiscatory, and no single rate or group of rates can be so held, for all the charges of a given railroad are interwoven. This being the case, the people should be educated to the needs of the railways, so that they may act with discretion.

One cloud Mr. Prouty sees upon the horizon, and that is the question of labor. While not suggesting for a moment that existing wage rates are too high, he sees the possibility of unjust demands being insisted upon, and the rub would come should labor force unjust rates upon the railroads and the railroads in turn endeavor to secure higher rates from the Interstate Commerce Commission in order to reimburse themselves. Then the Commission would have to stand between the public and the demand of the railroads, and it could not take money from the pocket of the general public in order to put it unjustly into the pocket of a portion of that public, the railway employes.

It is of the utmost importance, from various viewpoints, that no serious wage disagreements should arise. The government has succeeded, to an extent which no one dreamed possible a quarter century ago, in establishing a system of rate regulation which has come to be fairly acceptable even to the railroads. There is no reason to believe it could not be equally successful in establishing a system of determining the equitableness of railway wages. The attempt might raise a terrific political turmoil from the labor element, but it seems to be a thing which will have to be faced just the same.

Last Year's Light Production of Rails

No surprise need be felt that the production of rails in 1911 was only 2,822,790 gross tons, as now reported by the American Iron & Steel Association. It was well understood that rail orders were running light, and there was no hope of production even nearly approaching the high records of the past. Production of rails in the United States in gross tons has been as follows:

1860	183,070	1895	1,306,135
1870	553,571	1896	1,122,010
1880	1,305,212	1897	1,647,892
1881	1,646,518	1898	1,981,241
1882	1,507,851	1899	2,272,703
1883	1,214,905	1900	2,385,682
1884	1,022,188	1901	2,874,639
1885	976,978	1902	2,947,933
1886	1,600,537	1903	2,992,477
1887	2,139,640	1904	2,284,711
1888	1,403,700	1905	3,375,929
1889	1,522,204	1906	3,977,887
1890	1,885,307	1907	3,633,654
1891	1,307,176	1908	1,921,015
1892	1,551,844	1909	3,023,845
1893	1,136,458	1910	3,636,031
1894	1,021,772	1911	2,822,790

It will be observed at once that rail production has not increased steadily and rapidly, as has the production of pig iron. By almost any comparison that can be made it is found that pig iron production, despite its wide variations from year to year, doubles once every ten years. This has not been the case with rails. There was a rapid increase up to and including 1887, but after that year there was an interim of 11 years, in none of which did the output equal that of 1887. A new record was made in 1899, and then there was a rapid expansion to 1906, an increase of 76 per cent in seven years, but the total increase from 1887 to 1906, 19 years, was only 87 per cent, while in the same interval pig iron production was practically quadrupled. The 1906 rail production record has not been equaled in any of the five years since, whereas in three of the five years the 1906 pig iron production was exceeded.

In 1911 the United States Steel Corporation produced 1,568,028 tons of rails, which was 55.5 per cent of the country's total production, representing a slight decrease in the proportion as compared with preceding years.

In the record year for production, 1906, rail ex-

ports amounted to 328,036 tons, leaving 3,649,851 tons for domestic consumption. In 1911 rail exports amounted to 420,874 tons, the largest quantity on record, leaving 2,401,916 tons for domestic consumption, a decrease of fully one-third as compared with 1906.

Grafting in Business and Politics

Why should there be any distinction made between bribery in public life and grafting in private life? This question is suggested by disclosures made by Street Railroad Commissioner Witt, of the City of Cleveland. Under the terms of what is known as the Tayler grant or franchise, proposed by the late Judge Tayler, the Cleveland Railway Co. is operating the traction lines of the city under very close supervision by the municipal council and railroad commissioner.

Recently the railway company was authorized by the council to receive bids for 100 trail cars, and the best bid was submitted by the G. C. Kuhlman Car Co., the amount being $287,600. In the car specifications, the Taylor automatic ventilator was specified. A few days after the passage of the resolution authorizing the making of the contract, Mr. Dwight Dean, of the Kuhlman company, complained to the commissioner that the Taylor company had refused to give to the Kuhlman company the customary 20 per cent discount. Investigation developed that while it was true that an agreement existed providing for the reduction of 20 per cent on the price of the ventilators on all cars built by the Kuhlman company in which this ventilating device was used, Mr. Taylor had informed the Kuhlman company that on this particular contract the latter concern would not receive the discount. Mr. Dean explained that he objected to a certain individual, whose name was not disclosed, obtaining the 20 per cent, amounting to $1,560, which amount was to be given to this individual on the understanding that he would exert his influence to have the Taylor ventilators used upon the cars which the railway company was to purchase in the near future. In reporting the facts to the council, Commissioner Witt said:

> On learning these facts, your commissioner proposed that the Kuhlman company should change its contract price by deducting therefrom $7,800 to be paid for the ventilators, and then proposed to the Taylor company that it sell the ventilators directly to the Cleveland Railway Co., at list price, less 20 per cent, and deliver the same to the shop of the Kuhlman company, for installation. This arrangement, accordingly, will not only save the railway company $1,560, but it will prevent some person, who cannot be designated otherwise than as an unknown grafter from securing a rake-off of $1,560.

The facts having been called to the attention of County Prosecutor Cline, he said he would begin an investigation to determine whether or not a crime had been committed. "If," he said, "it was a city official, or a man in the city's employ, whose action may have been influenced in any matter that might have come before him, it would be a case of soliciting a bribe." We have no doubt that the prosecutor is right as to the law governing this case, but as a matter of morals, it is difficult to draw a distinction between the city official who accepts a bribe and thereby increases the cost to the taxpayers of the product which he buys, and the private individual who takes a "rake-off" which does not belong to him. In the particular case in question, the increased cost would be to the detriment of the people of Cleveland, because the rate of fare depends upon the economical operation of the street railways. In the case of a purely private enterprise, injury to the public at large might not result, but the offense would be none the less reprehensible.

The fact that crookedness in private business is just as wicked as it is in public life cannot be too vigorously emphasized. Business men who tolerate graft in private affairs in life have no right to complain of corruption in politics.

Railroad Tariff and Rail Wear

The Pennsylvania railroad system, including the Pennsylvania railroad and all lines affiliated, used 111,799 tons of steel rails for replacement purposes during the calendar year 1911. Statistics of this sort furnish an indication of the wear upon rails and the amount required for strictly replacement purposes, as the traffic movement on the system can be compared with that of the country at large. The ton-mileage of freight handled in the year by the Pennsylvania system was 35,531,538,445. Dividing this quantity by the number of tons of rails used for replacement gives a factor of 318,000 ton-miles, the amount of freight traffic of the system per ton of rails used for replacement.

The showing for a single year, of course, means very little. Statistics over a period of years, however, are indicative, though not necessarily conclusive, since conditions may be different with other roads. The Pennsylvania, however, handles about one-eighth of the total freight ton-mileage of the country, so that its experience is certainly of value.

During the eight years, 1904 to 1911, inclusive, the Pennsylvania system used for renewal purposes a total of approximately 1,000,000 tons of rails which, divided into its ton-mileage total, shows that on an average it laid one ton of rails for renewals for every 260,000 ton-miles of freight movement.

Were conditions precisely similar on all other roads, the conclusion would be that their rail wear and replacement requirements were in proportion. During the past eight years, the average freight ton-mileage of all the steam roads in the United States has been about 220,000,000,000 a year, which would, therefore, indicate a trifle less than 1,000,000 tons of rails a year, required for strictly replacement purposes. At the present time, the business is equal to about 250,000,000,000 ton-miles a year.

Rails are now wearing out at a rate which attracts attention, since the total production ranges from 3,000,000 to 4,000,000 tons a year, and this must cover not only the replacement requirements of the steam roads, but the similar requirements of other roads, the building of new track, and the export business. A scrutiny of the freight movement over a long period, as so admirably presented from year to year by Poor's Manual, shows that on an average the total movement has doubled about once in every dozen years. If rails wear out merely in proportion to the volume of traffic over them, there is naturally twice as large a tonnage being worn out in the country today, as was the case 12 years ago. As a matter of fact, the heavier train and locomotive weights and higher speeds tend to wear rails out more rapidly than formerly.

MEN OF THE IRON TRADE

Paul Kreuzpointer, a metallurgist for 32 years in the employ of the Pennsylvania Railroad Co., at Altoona, retired March 25, having attained the age of 70 years, and his name goes on the pension roles of that corporation. The announcement of Mr. Kreuzpointer's retirement has attracted wide attention, especially in foundry circles in and about Pittsburgh and western Pennsylvania, for he is probably one of the best known metallurgists as well as one of the longest in service in this territory, and his work has had an international influence. At the monthly meeting of the Pittsburgh Foundrymen's Association on Monday evening at the Fort Pitt hotel, an announcement was presented of Mr. Kreuzpointer's retirement, and made a part of the record of that meeting. Mr. Kreuzpointer's position with the Pennsylvania railroad has been unique. He is regarded as an expert in his line, and to him have been referred many problems of metallurgy from all portions of the country. Mr. Kreuzpointer was born in Munich, Germany, March 25, 1842. He attended schools in that city until he was 13 years old, and then by law, he was obliged to go to the "Continuation Schools" of Munich, where he studied until his eighteenth year. These "Continuation Schools" provided instructions in shop work, chemistry, physics, metallurgy, economics, civics and religion. It was this early training of a scientific and mechanical nature that enabled Mr. Kreuzpointer to achieve prominence later in this country, and to contribute his share to the industrial educational work of the public schools at Altoona. He came to America in 1866 and lived in Erie, Pa., until 1879. He entered the Pennsylvania Railroad Co.'s services at Altoona, first as a machinist, but in a few years he was transferred to the test department where he has since labored. Since living in Altoona, he has not only performed services of inestimable value to his company, but has been one of the most active spirits in developing the manual training course in the local schools. He is a member of many prominent scientific and technical circles, both in this country and Europe. Mr. Kreuzpointer will give up his active work with the Pennsylvania railroad, but will continue his interest in the schools and many societies to which he belongs, and where he is best known.

R. C. Carnahan, Canton, O., will soon take charge of the Tulsa Boiler & Mfg. Co., at Tulsa, Okla.

Henry Rathbone, of the Buhl Malleable Co., Detroit, Mich., has just returned from a visit in California.

John Gerlach was recently appointed field superintendent of the bureau of buildings and bridges, Milwaukee, Wis.

E. C. Hinman, president of the American Steam Pump Co., Battle Creek, Mich., has gone south for several weeks' visit.

J. A. Sargent, the engineer who has been in charge of the work at the Medina dam in Texas, has resigned to accept a position in Cuba.

P. P. Mirtz has been appointed mechanical engineer of the Lake Shore & Michigan Southern Railway Co., at Cleveland, succeeding A. R. Ayers.

S. J. Fero has been appointed as master mechanic of the Great Northern railway, with headquarters at Breckenridge, Minn., succeeding C. E. McLaughlin.

W. S. Piling, of Piling & Crane, Philadelphia, has returned from a several weeks stay at Nassau and other points of interest in the Bahama islands.

M. V. Hynes, who has been division engineer of the Cincinnati, Hamilton & Dayton railway, at Dayton, O., has been appointed engineer of maintenance of way.

Mentor Wheat, who resigned his position with the Stover Mfg. Co., Freeport, Ill., some time ago, has associated with a partner and opened a welding plant in Rockford, Ill.

F. F. Fitzpatrick, president of the Railway Steel Spring Co., has returned to New York from an inspection of the company's plants in St. Louis and Chicago.

W. H. Orrison, who has been manager of the mines of the Alabama Coal & Iron Co., at Atalla, Ala., has bought the interest of M. Lubin in the Lubin Mfg. Co., Anniston, Ala.

S. Frank Richards has been elected secretary of the Peck-Hammond Co., Cincinnati. Mr. Richards was with the company some years ago and has had considerable experience in the work of heating and ventilation.

P. L. Frailey, formerly advertising manager of the Empire Iron & Steel Co., Niles, O., has been named manager of publicity of the Brier Hill Steel Co., Youngstown, O.

Charles H. Gifford, first vice president of the American Blower Co., Detroit, Mich., will leave in a few days for a trip through the west in the interests of the company.

J. H. McLean, general manager of the Oliver Iron Mining Co., Duluth, the mining organization of the Steel Corporation, has been on a business trip to the Gogebic iron range.

H. G. Tyrrell, Evanston, Ill., consulting engineer, delivered a lecture recently before the Engineering Society of Northwestern University, on the subject of "Bridge Building."

R. G. Wood, president of the Alan Wood Iron & Steel Co., and Herbert Dupuy, chairman of the Crucible Steel Co. of America, who are touring together abroad, will return in April.

C. F. Loweth, chief engineer of the Chicago, Milwaukee & St. Paul railway, discussed "Personal Efficiency" in an address before the Civil Engineers' Club of the University of Illinois recently.

Charles S. Churchill, chief engineer of the Norfolk & Western railway, was elected president of the American Railway Engineering Association at the annual meeting held in Chicago recently.

L. B. Anderson, secretary and general manager of the Advance Pump & Compressor Co., Battle Creek, Mich., will return next week from a six weeks' trip to Cuba, Florida and points in the east.

E. G. Grace, general manager of the Bethlehem Steel Co., South Bethlehem, Pa., and J. H. Ward, private secretary to President Chas. M. Schwab, have returned from a three weeks' trip to Bermuda.

T. C. Skeen has become financially interested in the Continental Radiator & Foundry Co., St. Louis, and is now vice president of the company. Mr. Skeen is with the Seminole Land & Lumber Co., St. Louis.

J. W. Deetrick, general manager of the Republic Iron & Steel Co., and Chief Engineer Shackleford, of the

MEN OF THE IRON TRADE

same company, have returned from Birmingham, Ala., where they had been on an inspection trip.

William P. Parker, engineer who has been in charge of the construction work on the Galveston causeway, Texas, for the Blodgett Construction Co., is now with the Concrete-Steel Engineering Co., New York.

H. Z. Bixler, formerly chief engineer of the Republic Iron & Steel Co., and for the past 18 months with the Youngstown Steel Co., has been named chief engineer of the Brier Hill Steel Co., Youngstown, O.

Thomas McDonald, general superintendent of the Youngstown, O., district of the Carnegie Steel Co., is expected to return from his West Indian cruise this week. Mr. McDonald is accompanied by his wife and daughter.

John H. Long, for the past eight years sales engineer for the William Tod Co., Youngstown, O., has resigned to take a similar position with the United Engineering & Foundry Co. Mr. Long's headquarters will be in Youngstown.

J. D. Maxwell, president of the Maxwell-Briscoe Motor Co., and vice president of the United States Motor Co., has recovered from his illness of many months and is again in New York, where he will hereafter make his headquarters.

Albert Lodge has resigned his position with the Laughlin plant of the American Sheet & Tin Plate Co., Martins Ferry, O., and is now with the American Rolling Mill Co., of Zanesville, O., as manager of the shipping department.

J. C. Maben, president of the Sloss-Sheffield Steel & Iron Co., has gone to Birmingham, Ala., for a ten days' visit. About the middle of this month Mr. Maben expects to sail with his family for a several months' trip through Europe.

Thomas Kincade has resigned his position with the Aetna-Standard plant of the American Sheet & Tin Plate Co., Wheeling, W. Va., and assumed his duties as shipping manager of the Wheeling plant of the Whitaker-Glessner Co.

C. H. MacMillan, who recently severed his connection with the Dominion Steel Corporation, will accept an important position with the Canada Cement Co. He will investigate the fuel problem and endeavor to reduce the cost of production.

C. B. Wilson, vice president of the Ferro Machine & Foundry Co., Cleveland, and president of the Cleveland branch of the National Metal Trades Association, will address the meeting of the Superintendents' and Foremen's Club, of Cleveland, April 20.

S. P. Brown, who has been engaged in expert tunnel work in New York for some years, has been appointed chief engineer of the work of tunneling Mount Royal, Montreal, Que., by the Canadian Northern railway. The work is expected to consume two years.

Geo. Langen, manager of the Cincinnati Planer Co., Oakley, Cincinnati, is seriously ill with appendicitis at his home in Hyde Park, that city. Mr. Langen was to have left March 24 for an extended trip through Europe to study the different machine tool plants there.

Congressman W. C. Redfield, Brooklyn, N. Y., second vice president of the American Blower Co., was the guest of honor and principal speaker at a banquet given by the Adcraft Club, of Detroit, last week. James Irglis, president of the company, was toastmaster.

C. Lee Straub, consulting engineer of New York City, and formerly with the engine department of the Power & Mining Machinery Co., Milwaukee, Wis., is now in charge of the lubricating department of the Richardson-Phenix Co., Hudson Terminal building, New York.

C. B. Whitson, for some time a salesman in and about Indianapolis on iron and steel, has been connected with the sales department of the Brier Hill Steel Co. as special representative for the company's new product which is known to the trade as Lohmannized metal.

R. T. Coe, who has been assistant sales manager of the American Blower Co., Detroit, Mich., has been appointed manager of the Canadian plant of this company, at Windsor, Ont. This plant, which is known as the Canadian Sirocco Co., Ltd., is rapidly nearing completion.

William H. Cameron, of the American Steel Foundries, read a paper on safety appliances for foundries before the monthly meeting of the Pittsburgh Foundrymen's Association at the Fort Pitt hotel, Monday. The reading of the paper followed the usual dinner of the association.

John J. Manley, civic secretary of the Business Men's Club, Cincinnati, and formerly secretary of the Cincinnati branch of the Metal Trades Association, on April 1 became secretary of the Hisey-Wolf Machine Co., the plant of which is located at Colerain avenue and Marshall street, Cincinnati.

Chas. M. Schwab, president of the Bethlehem Steel Corporation, will be the guest of the Manufacturers' Club, Cincinnati, on the evening of April 10, when a joint meeting with the Business Men's Club will be held and a banquet served at the latter place. Mr. Schwab will select his own subject, which will be along business lines.

Arthur D. Little, Boston, has been elected a member of the Corporation of the Massachusetts Institute of Technology. He is president of Arthur D. Little, Inc., chemist and engineer, and also president of the American Chemical Society and a member of the executive committee of the Eighth International Congress of Applied Chemistry.

John F. Stevens, formerly chief engineer of the Isthmian Canal Commission and later president of the Oregon Trunk railroad and the Spokane, Portland & Seattle railway, is now president of the John F. Stevens Construction Co., 55 Wall street, New York. The company was recently incorporated to supervise or execute railway construction, canal, river or harbor improvements or irrigation projects.

James Daley, smelter at the open-hearth furnaces of the Ohio works of the Carnegie Steel Co., has resigned to accept the position of superintendent of construction with the Brier Hill Steel Co. Mr. Daley was construction engineer during the building of the open-hearth department of the Ohio works and since that time has been smelter. He will superintend the construction of the eight furnaces the Brier Hill Steel Co. will erect.

IRON AND STEEL SECURITIES

The probability of serious railroad and coal strikes in this country brought about a feeling of hesitancy on the New York stock exchange last week; security prices, however, did not decline in any marked degree.

Monday, stocks opened active and strong but later reacted; sales were greater in volume than for any other day this year; foreign markets still unsettled by failure to settle English coal strike. Tuesday, the market was reactionary but many specialties advanced to the highest levels of the year. Wednesday, trading was active but prices were irregular; the United States Steel Corporation sold $30,500,000 worth of bonds, and the market sold off. Thursday the market continued active but very irregular: Steel common and Amalgamated Copper being under selling pressure. Friday stocks were less active but the undertone was firm and prices averaged higher; the minimum wage bill for coal miners became a law in England; orders were issued for a strike in the anthracite coal field in this country. Saturday, stocks were moderately active but prices closed at or near the lowest.

Money on call ranged between 3 and 2 per cent. Time money was decidedly more active, the supply, however, being held rather firmly. The actual condition of clearing house institutions showed loans increased $13,829,000; net deposits increased $7,467,000; total reserve $431,232,000, and the excess of reserve $487,500, a decrease of $11,747,550. Non-member banks and trust companies showed loans increased $1,849,800; net deposits increased $173,100; reserve on deposits increased $804,800, and the percentage of reserve 19.4 against 19.2 the week previous. Bank clearings showed an increase of 1.7 per cent over the previous week and 17.9 over the corresponding week a year ago. Commercial failures numbered 292, compared with 273 the previous week and 244 the corresponding week last year. Shares were sold to the number of 4,736,900, compared with 2,777,600 the previous week and 1,340,161 the corresponding week last year.

	Clos'g Quo. Mar. 30	Changes in week.	Annual Meeting date 1912	Stock Outstanding	Basis.	Dividend—Last Dividend	Dividend—Date Last Div. Pay
Allis-Chalmers	2⅝	+1⅞		$19,820,000		.....	
Allis-Chalmers, pr.	6⅞	+2⅝		16,050,000	7 cum.	1¾ Q.	Feb., 1904
American Can	21	+1¾	Feb. 6	41,233,300		.....	
American Can, pr.	104⅜	+ ⅜		41,233,300	7 cum.	1¼ Q.	Apr., 1912
Am. Car & Fdy.	56¼	—1	June 27	30,000,000	2	½ Q.	Apr., 1912
Am. Car & Fdy., pr.	117¼	.....		30,000,000	7 n. c.	1¾ Q.	Apr., 1912
American Loc.	39	.....	Oct. 15	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr.	109	+1		25,000,000	7 cum.	1¾ Q.	Apr., 1912
American Ship	47⅝	.....	Oct. 9	7,600,000	4	2 Q.**	June, 1911
American Ship, pr.	103¾	.....		7,900,000	7 n. c.	1¾ Q.	Apr., 1912
Am. Steel Foundries	31¾	+ ⅛	Mar. 21	17,184,000	5	1¼ Q.	May, 1911
Barney & Smith	15	.....	June 4	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr.	85	.....		2,500,000	8 cum.	2 Q.	Dec., 1911
Bethlehem Steel	33½	+2	April 2	14,862,000		.....	
Bethlehem Steel, pr.	62	+1½		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	43¾	+1½	Mar. 19	45,000,000*	5	1¼ Q.	Feb., 1912
Cambria Iron	44	.....		8,468,000*	4	2 S. A.	Apr., 1912
Chicago Pneumatic Tool	50	+3½	Feb. 19	6,448,800	4	1 Q.	Apr., 1912
Colorado Fuel	30¼	+ ¾	Oct. 21	34,235,500		1¾ Q.	April, 1902
Crucible Steel	113¾	+ ¼	Nov. 15	24,578,400		.....	
Crucible Steel, pr.	82	—1¼		25,000,000	7 cum.	1¾ Q.	Mar., 1912
Empire Steel	10	.....	Feb. 28	1,254,770		.....	
Empire Steel, pr.	36	.....		2,500,000	6 cum.	2 S. A.	July, 1911
Fay & Egan	70	.....	Feb. 20	1,000,000	7	1¾ Q.	Nov., 1908
Fay & Egan, pr.	110	.....		1,000,000	7 cum.	1¾ Q.	Feb., 1912
General Electric	165¾	—1⅝	May 14	77,281,200	8	2 Q.	Apr., 1912
Harbison-Walker	40	.....	Jan. 15	18,000,000	2	½ Q.	Mar., 1912
Harbison-Walker, pr.	103	.....		9,600,000	6 cum.	1½ Q.	Jan., 1912
International Pump	30	— ⅜	Dec. 10	17,762,500		½ Q.	Apr., 1905
International Pump, pr.	82⅞	+ ½		11,350,000	6 cum.	1½ Q.	Feb., 1912
Lackawanna Steel	29	.....	Mar. 13	34,978,000		.....	
Lake Sup. Corp.	29¾	+ ¼	Oct. 2	40,000,000		.....	
New York Air Brake	53⅝	—1½	Mar. 13	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	95	.....	Feb. 7	8,500,000	6	1½ Q.	Mar., 1912
Niles-Bement-Pond, pr.	101	.....		2,000,000	6 cum.	1½ Q.	Feb., 1912
Otis Elevator Co.	77	.....	Mar. 18	6,358,600	4	1 Q.	Apr., 1912
Otis Elevator Co., pr.	101	.....		6,375,300	6 n. c.	1½ Q.	Apr., 1912
Pa. Steel	60	.....	May 13	10,750,000		.....	
Pa. Steel, pr.	101	+ ¾		20,587,500	7 n. c.	3½ S. A.	Nov., 1911
Pittsburgh Coal	19¾	+ ¾	Mar. 12	28,104,600		.....	
Pittsburgh Coal, pr.	82	+2⅛	Oct. 7	27,071,800	7 cum.	1¾ Q.	Apr., 1912
Pittsburgh Steel Co., pr.	101⅞	.....	Feb. 21	7,000,000	7 cum.	1¾ Q.	Mar., 1912
Pressed Steel Car	33	—1⅜		12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr.	101⅜	+ ⅜	Nov. 13	12,500,000	7 n. c.	1¾ Q.	Feb., 1912
Pullman	160⅞	+ ⅛	Mar. 7	120,000,000	8	2 Q.	Feb., 1912
Railway Stl. Spring	31½	— ⅜		13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr.	100½	+ ⅜	Oct. 16	13,500,000	7 cum.	1¾ Q.	Mar., 1912
Rep. Iron & Steel	22	.....		27,191,000		.....	
Rep. Iron & Steel, pr.	72	—1¼	Mar. 13	25,000,000	7 cum.	1¾ Q.	Jan., 1912
Sloss-Sheffield	44⅛	—4⅜		10,000,000	5	1¾ Q.	Sept., 1910
Sloss-Sheffield, pr.	112	.....	June 26	6,700,000	7 n. c.	1¾ Q.	Apr., 1912
U. S. Pipe & Fdy. Co.	16⅜	+ ⅜		12,500,000		1 Q.	Dec., 1907
U. S. Pipe & Fdy. Co., pr.	53½	+ ½	April 15	12,500,000		1¼ Q.	June, 1911
U. S. Steel	67⅝	—1¼		508,302,500	5	1¼ Q.	Mar., 1912
U. S. Steel, pr.	111⅝	—1⅛		360,281,100	7 cum.	1¾ Q.	Feb., 1912
U. S. Steel 5s	102¾	— ⅛	Sept. 17	465,189,500	5	5 Q.‡	
Va. Iron, Coal & Coke	63	—1	Oct. 1	9,073,680		.....	Oct., 1907
Westinghouse Air Brake	165	+2	June 12	14,000,000*		5. †	Apr., 1912
Westinghouse Electric	76½	—2½		3,998,700*	7 cum.	1¾ Q.	Apr., 1912

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Include 2½ regular, 1¼ extra and 1 special.

Bonds, exclusive of government bonds, were sold to the amount of $19,926,000, compared with $16,475,000 the preceding week and $13,359,000 the corresponding week last year.

Copper Stocks

New York.—Amalgamated Copper closed 80¾, a net gain of ¾.

Boston.—Anaconda closed 40½, no change; Calumet & Arizona closed 72½, a net gain of 5; Calumet & Hecla closed 467, a net loss of 2; North Butte Mining closed 33¼, a net gain of 2¼; Quincy Mining closed 83½, a net gain of 1½.

Financial Notes

The Pittsburgh Coal Co. has declared the regular quarterly dividend of 1¼ per cent on preferred stock, payable April 25.

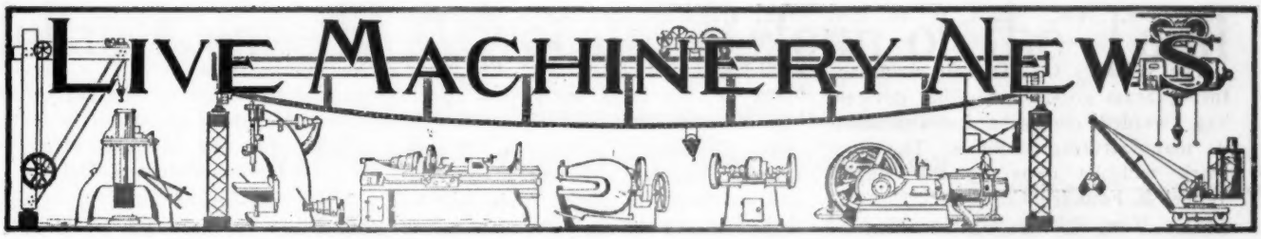
The Chicago Pneumatic Tool Co. has declared the usual quarterly dividend of 1 per cent, payable April 25.

The J. I. Case Threshing Machine Co. has declared a quarterly dividend of 1¾ per cent on its preferred stock, payable April 1.

The Standard Chain Co. has declared the usual quarterly dividend of 1 per cent, payable March 30.

The American Ship Building Co. has declared the regular quarterly dividend of 1¾ per cent on preferred stock, payable April 15.

The American Seeding Machine Co. has declared the regular quarterly dividend of 1½ per cent on the preferred and 1 per cent on the common, payable April 15.



In New York, machinery sales for the first quarter of 1912 did not aggregate as large a total as was reached in the corresponding period in 1911. Business in March was about the same in volume as during February. The Ingersoll-Rand Co., New York, is inquiring for the machinery for the new plant of the Cameron Steam Pump Works at Phillipsburg, N. J. In Pittsburgh, the machinery market shows more activity and inquiries for small tools are fair; rolling mill machinery is in especially heavy demand. In Cleveland, the volume of machinery sales for March made that month one of the best on record; the demand was distributed among all lines and was made up mostly of small lots. In Chicago and the western markets, demand for machine tools continues rather quiet in comparison with the volume of business in other lines of machinery; the market in general, however, is moving along easily.

Power Plant Equipment

The Des Moines City Railway Co., Des Moines, Ia., expects to build a new power plant. The estimated cost of the machinery is $95,584.

The authorities of Cape May, N. J., are planning to install a water and street lighting system, including a power plant; also a sewage disposal plant.

E. J. Brooks & Co., manufacturers of railway supplies, North Thirteenth street, Newark, N. J., are preparing to enlarge their power plant and install an additional engine.

The Hillsboro Light & Power Co. has been organized at Hillsboro, Wis., to construct and operate an electric lighting and power plant. The company is capitalized at $25,000 and F. A. Wopat, Edward Kuhn and F. A. Machore are the promoters.

The Oakfield Light & Power Co. has been incorporated at Oakfield, Wis., with $6,000 capital to establish and operate an electric lighting and power plant. W. E. Bristol and F. J. Carpenter, of Oakfield, are the promoters.

Charles H. Kennedy, H. D. Anderson and H. P. Carr, New Brighton, Pa., have applied for a charter for the City Light & Power Co., to operate in the city of Pittsburgh, with plans for building a general light and power station for public light and power distribution.

Contracts will probably not be let before December, 1912, for the development of the water power on the Rocky river, near Three Rivers, Mich., including a municipal lighting plant. The estimated cost of the work is $50,000. Cox, Norton & Co., Coldwater, Mich., are the engineers.

The Fred M. Prescott Steam Pump Co., Milwaukee, was awarded the contract for furnishing and installing a Prescott pumping engine in the municipal waterworks plant at Sheboygan, Wis., at $12,500. The board of water commissioners is in the market for a 350-horsepower boiler.

The Mahoning & Shenango Railway & Light Co., of Youngstown, O., and Sharon and New Castle, Pa., will vote this week on increasing the bonded debt of the corporation from $10,000,000 to $65,000,000. The company is understood to be planning extensive improvements to its light plants and also extensions to its traction lines toward Cleveland.

New Construction

The Timken Detroit Axle Co., Detroit, is taking bids on a new factory building, four stories, 60 x 140 feet, to be located at 132 Clark avenue, that city.

The University of Minnesota is building a new shop at the Agricultural school, St. Anthony Park, near St. Paul. The general contract has been let to C. P. Johnson.

The C. H. Wheeler Mfg. Co., Eightcenth and Lehigh avenue, Philadelphia, manufacturer of pumps, etc., has taken bids on a new manufacturing building, to cost approximately $150,000.

The Evered Foundry & Machine Works, Superior, Wis., has been granted building permits for the erection of two one-story buildings, one 50 x 50 feet, and the other 40 x 50 feet.

The New Hampton Mfg. Co., New Hampton, Ia., manufacturer of gas engines, expects to remove its plant to Sioux City, Ia., where a new factory, 50 x 100 feet, is being built.

The United States Enameling Co., Moundsville, W. Va., is preparing to build a plant for the manufacture of enameled and galvanized iron goods. The capital is $10,000.

The Altoona & Logan Valley Electric Co. is having plans prepared for an addition to its car plant, which is to be constructed of brick and steel and reinforced concrete.

The Union Switch & Signal Co. has awarded the contract for the enlargement of its general office building at Swissvale, Pa., to Cuthbert Brothers Co., Pittsburgh.

Ground has been broken for the two blast furnaces and four open-hearth furnaces which will be added to the Monessen, Pa., plant of the Pittsburgh Steel Co.

The Chattanooga Implement & Mfg. Co., East Chattanooga, Tenn., has commenced the erection of an addition to its warehouse, 60 x 300 feet, three stories. Estimated cost is $252,000.

Reports received at the offices of the San Jose, Cal., chamber of commerce state that the American Can Co. is planning to build a can factory at San Jose.

Extensive additions will be made to the present plant of the Bell Electric Motor Co., Garwood, N. J. Two steel and concrete buildings, one 50 x 200 feet, and one 50 x 120 feet, will be erected.

A. L. McLean is reported to be planning the construction of a plant for the manufacture of metal shingles and other building material at Asheville, N. C. A site for the plant has been secured.

The United States Steel Railway Tie Co., with offices in the Oliver building, Pittsburgh, is planning to erect a plant in the near future, the site of which is not announced. R. E. L. Maxey is manager.

The Lucius Engineering Co., Pittsburgh, has the erection contract for the various buildings of the H. K. Porter Locomotive Co. The general contract has been awarded to the Pittsburgh Construction Co.

The Harley-Davidson Motor Co. has commenced excavating for a five-story addition to its motorcycle plant at Thirty-seventh and Chestnut streets,

Milwaukee, Wis., which is to cost $100,000.

The Winkley Co., Detroit, manufacturing brass goods and oiling devices, has awarded contracts for extending its manufacturing facilities. The steel work will be done by the Russel Wheel & Foundry Co.

The New Britain Machine Co., 22 Chestnut street, New Britain, Conn., has had plans made for new factory and storage buildings. The factory structure will be four stories, 56 x 160 feet.

The Brown-Lewis Mfg. Co., manufacturer of harvesters and discs, will move from Walla Walla, Wash., to Seattle. The foundry and disc department will be moved about Aug. 1, and the remainder about Oct. 15.

The Jacobson Machine Co., Warren, Pa., is considering plans for an addition to its plant for making farm engines and implements, and also automobile axles. Considerable additional equipment will be needed.

George W. Graves, 56 Rowland building, Detroit, is preparing plans for a one-story power house, 50 x 75 feet, and a one-story foundry, 80 x 100 feet, for the Murphy Iron Works, of Detroit. These improvements are expected to cost $40,000.

The Fire Protection Equipment Co., Ltd., Toronto, Can., advises that it contemplates the manufacture and sale of fireproof doors, etc., specializing in equipment for protection against fire. George D. Perry has been elected president and S. B. McMichael secretary.

The Murphy-Potter Co.,, 364 Trombley avenue, Detroit, will erect a new plant for the manufacture of brass specialties and automobile parts. Power transmission machinery and machine tools for brass working will be required.

The Ann Arbor railroad is to erect new shops at Owosso, Mich., where a 40-acre site has been donated by the city. The present shops are overcrowded. D. S. Donley has been made superintendent of the road, succeeding K. A. Gohring, resigned.

The Pennsylvania Tank Car Co., Sharon, Pa., has awarded a contract for a new building, 40 x 250 feet, to increase its capacity for erecting tank cars. The improvements now under way will double the capacity of the works.

George S. Rider & Co., Century building, Cleveland, are drawing plans for a seven-story building for Bardons & Oliver, manufacturers of engine lathes, Cleveland. It has not yet been definitely decided, however, when the structure will be erected.

The Canada Steel Goods Co. and the Canada Shovel Co., Hamilton, Ont., are each planning a structural steel addition with dimensions of 100 x 60 feet and 100 x 80 feet, the latter being for the Steel Goods Co. Each building will cost $10,000.

The Wheeling Tumbler Co., Wheeling, W. Va., has commenced construction on its main plant. This will be rushed to completion. The company is ordering its machinery to have it ready for delivery when buildings are completed.

The board of directors of the Walsh & Weidner Boiler Co., Chattanooga, Tenn., has filed an amendment to its charter, asking that its capital be increased from $100,000 to $150,000. An additional building will be erected and the output of steel tanks and other products will be enlarged.

Patterson & Davidson, architects, Monadnock block, Chicago, are designing a new foundry and warehouse tor the Home Stove Works, 2262 West Eighteenth street, Chicago. The foundry will be 136 x 166 feet and the warehouse 92 x 205 feet, each two stories.

The Aluminum Castings Co., Chene and Finlay streets, Detroit, is building a new plant for the manufacture of aluminum and soft steel castings. F. C Root is manager. Contracts for the building, which is to cost $50,000, have been let. Considerable equipment will be necessary.

Moyer & Fairibault, 375 Fulton street, Brooklyn, N. Y., have been awarded the contract for erecting the new factory for the Doehler Die Casting Co., Court and Ninth streets, that city. The structure will be a reinforced concrete building, seven-story, 50 x 100 feet, to cost about $50,000.

The Tulsa Sheet Metal Co., Tulsa, Okla., recently incorporated, advises that the concern was formerly known as the Hines Sheet Metal Works, a copartnership of 12 years. The company will build a plant in the near future. No definite plans regarding details have been made.

The Struthers-Wells Co., Warren, Pa., is asking for bids for extensions to its plant to cost $75,000; also a boiler shop to be of steel frame construction. A new traveling crane and additional machines and cold rolls are included in the improvements. D. P. Lott is secretary and general manager.

The George W. Mason Engineering & Mfg. Co., which has been operating a plant at West Middlesex, Pa., for a number of years, is erecting a new plant at New Wilmington. It will dismantle the old plant and move the machinery to the new site. The new plant will be used as a foundry.

Architect Albert Kahn, Detroit, is taking bids for a fireproof steel factory building for the Lima Locomotive Works, Lima, O., 80 x 250 feet, one and two stories. The same architect is preparing plans for a factory building for the McCord Mfg. Co., on East Grand boulevard, Detroit.

It is announced that J. George Shaw, general manager of the Milwaukee Steel Casting Co., has selected a site of five acres at Kirkland, Wash., on which it is proposed to erect an establishment similar to the plant in Milwaukee. The plant will cost about $50,000.

The Cape Fear Machine Works, Wilmingon, N. C., announces that it is building at the foot of Church street, in that city, and will move its present plant to the new building. No machinery will be added. The new plant will consist of a machine shop, blacksmith shop, foundry and pattern shop buildings, etc.

The Ingalls-Shepard Forging Co., Harvey, Ill., advises that the increase of capital stock which it recently voted is for the purpose of adding to the capacity of the drop forge shop. The company has made an addition of 50 x 100 feet to its main shop, with additional boiler capacity and is installing some of the largest drop hammers in use in this country.

The Wyandotte Foundry Co., 1006 Hammond building, Detroit, announces that it has started work on the rebuilding of its foundry at Wyandotte, Mich., recently damaged by fire. The building as designed is 80 feet x 140 feet, of brick and steel construction with metal sash throughout and with a five-ton crane. A power elevator for a cupola hoist and an industrial railway for plant and yard service will be installed.

The Tomahawk Iron Works, Tomahawk, Wis., will begin the construction of an extensive addition on April 1 and a new corporation to be called the Tomahawk Steel & Iron Works formed. It has been voted to increase the capital stock from $15,000 to $30,000. The plant will be converted into a steel plate shop, manufacturing boilers, tanks and other sheet steel products.

The International Typesetting Machine Co. has been organized to manufacture linotype machines and accessories in competition with the Mergenthaler Co. Herman Ridder, publisher of the *Staats-Zeitung*, New York City, is the chief organizer. The company is capitalized at $5,000,000 and has leased a piece of property near Furman and Montague streets, in Brooklyn, from the New York Dock Co., where a building will be erected.

Julian Kennedy Advocates Reform of the Tariff

In Testifying Before Stanley Committee—Prof. Grasty Gives His Views Concerning Deposits in the South—Munsey Testifies

The committee of the house of representatives investigating the United States Steel Corporation continued its examination of witnesses last week.

Julian Kennedy, the well-known engineer, testified that he had designed and constructed for the United States Steel Corporation, blast furnaces and rolling mills at Braddock, Youngstown, Homestead, Bessemer and other points. In response to questions by Chairman Stanley, the witness said that if mills are operated at 60 to 80 per cent of their total capacity they could be said to be operated fairly economically.

Why Prices Fluctuate

Interrogated regarding violent fluctuations in prices of steel products, Mr. Kennedy said that an agreement had once been made so as to produce stability in prices. These fluctuations, he said, were more violent 15 to 20 years ago, and were caused by the tariff being too high on some products. In 1898 the steel tube business was in bad condition and "a combination was formed so as to get some profit out of the business. The tariff was $40 a ton on tubes, which was a Chinese wall. A moderate tariff would have allowed goods to come in from abroad during times of heavy demand and would have steadied prices and reduced exorbitant profits. When demand decreased the bottom fell out of prices.

"The Steel Corporation endeavored to prevent these violent fluctuations," continued Mr. Kennedy. "At the present time they are not so violent."

The witness declared that he had made an appraisal of the physical valuation of the steel tube works of the country for J. P. Morgan & Co.

"What was the value?" asked Mr. Stanley.

"I would not like to give the figures; Mr. Morgan will furnish them." said Mr. Kennedy.

Mr. Stanley rejoined: "Mr. Morgan stays in Egypt. I do not wish to press you, but was it in excess of $19,000,000?"

"I do not think so," replied Mr. Kennedy.

Witness said the National Tube Co. was organized after the appraisement was made. Its capitalization was a little higher than the appraised value of plants. This appraisement did not include good will. "Ninety per cent of the companies were included in the National Tube Co.," said he. "There was an increase in prices after the organization. The companies that remained out did a good business."

Witness said the Steel Corporation made a handsome profit on its business after the purchase of the Sharon Steel Co. and the Donora Co. This was due largely to the agreement of Messrs. Mellon, Frick, Donner, Stephenson and Flinn to stay out of the steel business for ten years, thus reducing competition.

Then ensued a sharp controversy between Representative Gardner and Chairman Stanley regarding the price paid by the Steel Corporation for the Union and Sharon companies. Stanley stated that the price was $65,000,000, while Mr. Gardner said that according to the report of Herbert Knox Smith, commissioner of corporations, the price was $34,000,000. Mr. Gardner showed that Mr. Stanley had not read the two contracts providing for the acquisition of these companies, and declared that "the information obtained by Herbert Knox Smith contained the only reliable figures we have on this subject."

"I am glad Mr. Gardner holds such a high opinion of Mr. Smith," said Chairman Stanley.

Representative Bartlett objected to the manner in which the chairman was being interrogated by Mr. Gardner.

"I do not mind that," said Stanley, "but there should be a little more courtesy shown."

Mr. Gardner then took his hat and left the committee room in disgust.

After considerable wrangling regarding various published estimates of the value of the property of the Tennessee Coal, Iron & Railroad Co., assuming that it included 700,000,000 tons of ore and coal, the witness said: "It is worth $100,000,000 at least."

Labor Costs Abroad

The witness said that he had constructed blast furnaces in India. The cost of production of pig iron in India is about the same as in the Birmingham, Ala., district. The cost of labor is a little higher in India because some high-class American labor has been sent there.

Practically the entire afternoon session was taken up by Chairman Stanley endeavoring to have Mr. Kennedy give the cost of producing a ton of steel rails and the comparative cost in the United States, Great Britain and Germany. The witness said his answer would be a guess, as he had not manufactured rails for 20 years and had not kept posted on the subject. Despite the statement, Chairman Stanley prodded the witness until Representative Young protested. Mr. Stanley was determined, however, to propound the question he had prepared.

Chairman Stanley asked Mr. Kennedy as to the cause of wrecks due to broken rails. He replied:

"The wheel loads have increased enormously is one cause. Engines have greatly increased in size. The driving wheels are counterbalanced by balancing rods and driving wheels strike the rails a hammer blow at every revolution. The tendency to run trains at high rates of speed makes the strain on the rails extremely severe. If the rail has a soft head it will flow and spread. There is more danger of breakage if there is a high carbon content in the harder rail. This is especially true in cold weather. Rails are given immense increase in severity of treatment as compared with years ago.

Try to Find Solution

"The rail makers are carefully studying this question and no doubt heavier rails will be adopted if the present heavy wheel loads and high speeds are maintained. The pounding of the driving wheel is the chief cause for these disasters. A person standing by the track when a fast train goes by wonders how the rails stand the strain. Experiments nave shown that when a train is moving 65 miles an hour, the driving wheels leave the track. This causes severe pounding of the rails.

"It is no advantage to the steel companies to manufacture the high carbon hard rails. They cost as much as the softer ones but wear longer."

The witness said that he would not assume that "we are at the end of

discoveries of coal and ore." He declared that indications are that there will be important discoveries of coal and ore even in the old districts. There are no signs of exhaustion of the supply of these materials.

Speaking of the cost of labor in India, he said that men are paid 7 cents a day, but it would require eight or ten of these people to perform the same amount of work done by one American laborer. This is due partly because of the small size of the Indian laborer and the lack of physical strength.

"Would it be more difficult for the Interstate Commerce Commission to determine a share of a rate than to fix a through rate?" asked Representative Young.

"No," replied Mr. Kennedy, "but the present scheme of fixing rates is impracticable."

"What change would you suggest?" asked Representative Young.

"If a law should be enacted," said the witness, "authorizing the Interstate Commerce Commission to fix a rate to remain in effect until declared unfair by the supreme court, the situation would be much better. We have a commerce court which is busy upsetting rates made by the Interstate Commerce Commission. The laws should be more definite."

Told of His Career

Representative Young consumed about an hour endeavoring to prove by the witness that there had been several panics in this country. Mr. Kennedy agreed that there had been several periods of business depression but did not feel competent to express an opinion as to how much influence the tariff had on these disturbances.

He said that congress should stop the practice of selling products cheaper abroad than in the home market. Another practice that congress should prevent, he said, was that of the railroads transporting products for export and imports at less than cost of the service. This caused higher rates on domestic goods. These rates, he declared, are ridiculously low and in effect nullify the operation of the tariff. He said that it is wrong, unjust and inequitable; and frequently a woman is arrested for smuggling a few jewels while the railroads by hauling export and import materials at less than cost in effect evade the tariff. Congress, he said, should "get after this practice vigorously."

He declared that the general impression that Europe is a dumping ground for inferior materials which could not be used in this country and consequently are sold cheaper abroad, is erroneous. The goods sold in Europe are made according to specifications, he declared, and the same quality of materials—steel and wire—are sold abroad cheaper in Europe than America. He himself had bought steel for building construction for use in this country and abroad. He paid $8 more a ton for the same material for domestic use than that for export. The American people, he said, do not benefit from this practice, but it is advantageous to the steel companies in keeping their plants in operation to a greater capacity.

States His Belief

"I am a believer in a tariff for revenue only," said the witness. "A tariff that is too high is absurd. At present the tariff laws are made in an unbusinesslike manner and log-rolling methods prevail. One clique agrees to give a rate on pottery if another interest gets a satisfactory rate on sugar. The steel men would accept a tariff of $100 a ton if they could get it. Business methods should be employed in enacting tariff laws and the tariff rates should be fixed at an equitable rate. Information should be secured from non-partisan and disinterested sources. But those interested will take all the protection they can get, overlooking the fact that this is the wrong policy and that there will be a reaction. After a while the people will get sick of high rates and go to the other extreme."

Ore Expert on the Stand

Prof. J. S. Grasty, ore expert of the University of Virginia, who has studied the ore reserves of the United States, Germany and England, testified that in 1908 he made an investigation of the ore deposits in the Birmingham, Ala., district. Investigation continued for two years for a Baltimore syndicate which desired to establish blast furnaces. The acreage he examined was scattered and the ore was of inferior quality and plans were abandoned. He said that the principal ore supply in this region lies between Bessemer and Birmingham, and other deposits except those in Red Mountain should be omitted from consideration as being of no commercial value. The valuable area is about 30 miles long. There are valuable ore deposits in Virginia, Georgia and Tennessee, the witness said. The Birmingham district has the same advantages as these districts including the low cost of assembling raw material. In Virginia, he said, it cost nearly $2 more to manufacture a ton of pig iron than in the Birmingham district. Virginia has the advantage of being closer to the markets and of lower freight rates which practically equalized the higher cost of manufacture in Virginia. Birmingham is superior to Virginia on account of the "permanency" of its ore supply, while in Virginia the supply is being exhausted rapidly.

In Birmingham District

In the Birmingham district the United States Steel Corporation owns 75 per cent of the ore, 53 per cent of which is commercially available. On this percentage the Steel Corporation owns in this region 200,000,000 tons of ore unquestionably commercially available; 400,000,000 tons probably commercially available, and 800,000,000 tons possibly available.

Looking into the distant future, the witness declared, the Steel Corporation has an enormous advantage over the independent concerns. This advantage depends in some degree upon what extent the low grade ores can be utilized. He did not believe there would be more discoveries in this region. The witness said that the Republic Iron & Steel Co. controls 50,000,000 tons of uncovered ore in the Birmingham district; the Sloss-Sheffield Co., 54,000,000 tons; the Woodward Co., 81,000,000 tons; the Alamaba Consolidated Co. and the Southern Iron & Steel Co., 15,000,000 tons each.

Mr. Munsey Explains

Frank A. Munsey, publisher, testified regarding an article in his magazine on the United States Steel Corporation. The witness said he was the author of the article. Assistance was given him by the Corporation by furnishing a statement showing that its property was valued at $1,782,000,000. He did not take the figures from books. In response to Stanley's question, witness said the article was not submitted to Judge Gary or any one connected with the Steel Corporation and they did not express either approval or disapproval of it.

Questioned regarding the identity of a director of the United States Steel Corporation, who had stated the northern ore leases were worth $500,000,000 to the Steel Corporation and that he would not dispose of them for that price, Mr. Munsey refused to answer, declaring it was a confidential statement. After considerable fencing between Chairman Stanley and under protest Mr. Munsey said the statement was made by George F. Baker, a director of the Steel Corporation.

MEXICAN INDUSTRIES

Seriously Affected by Revolutions.—Some Arrested Projects.

(Special Correspondence.)

Monterey, N. L., April 1.

The prolonged and acute political disturbances which followed close upon the accession to the presidency of Madero, the leader of last year's revolt, which resulted in the collapse of the Diaz government, have seriously affected all lines of trade and industry throughout the Republic. Since the middle of February, commercial traffic on the main trunk line of the railroad to the El Paso gateway has been practically suspended north of Torreon and many of the connecting lines have been interrupted by the interference of the rebels now under the leadership of Gen. Orozco. The situation south of Mexico City has been even worse and has been so practically continuously since the Madero revolt. The result of this condition and of the uncertainty as to the date of the government everywhere in the country has curtailed the demand for all iron materials and especially for the iron and steel products for fabrication. The Monterey Iron & Steel Co. has operated practically continuously so far, the greater part of its output going into steel rails to fill the contract made with the National Railways two years ago. Recently the company has enlarged its faculties for the manufacture of bolts, and experts from the United States have been engaged to bring this branch up to the standard. The company has been receiving some iron ore from the "Iron Mountain" deposit at Durango, this making a desirable mixture with the soft ores from the company's properties near Monclova. The company has also been developing a deposit of high grade manganese near Chihuahua to meet its needs.

Plans Set Back

The ambitious plans of the Oaxaca Iron & Coal Co. in the south of Mexico were seriously set back with the withdrawal of the support of the Diaz government, which support the project enjoyed through the personal interest of ex-President Diaz, who had spent his earlier days in the region in which the deposits are, and who had a personal pride in fostering the advancement of his native state. A very large sum was expended in exploration and drilling for coal under the direction of John Birkinbine Jr., of Philadelphia, and with reported satisfactory results. The iron deposits were considered sufficiently proven to justify the company's large plans. They were near the coal and both were in a remote section southwest from Puebla. A railroad from Puebla to the properties and beyond to the Pacific was projected as part of the plan. The whole project was conceived and developed by Alferdo B. Adams, of Mexico City, and he secured in Europe the funds for the work done. With the outbreak of the revolt against Diaz, the further financing became difficult, and about a year ago all work was suspended. Mr. Adams returned to Mexico from abroad in January and undertook to revive the project, but in this he has been again hampered for the region is dominated by the revolutionists of the south. It is considered likely that the resurrection of this proposition is for some far future time, even if the re-establishment of responsible government should again soon permit activity.

Las Truchas Deposit

Recently the much heralded Las Truchas iron ore deposit in the state of Guerrero at the mouth of the River Balsas appeared on the New York market and endeavor was made to finance a plant to develop and operate it. This is a group of hills near the Pacific coast, capped with a flat but thick bed of hematite of good grade and quality. Engineer's estimates of the tonnage range from 400,000 to 4,000,000 tons. It is certainly much above the lower figure, for the superficial exposure is great and erosion has "blocked" out a large tonnage. The property is unexplored. It is proposed to quarry the ore and transport it by tram to the foot of the hill and then to build a railroad either to the roadstead at the river mouth or to the good harbor of Zihuatanejo, about 20 miles away. Concession for a railroad along the Pacific has been granted to an American syndicate and, if this is built, the Las Truchas deposit would be practically provided with transportation. The origin of the deposit is probably the oxidization of a large contact sulphide mass between an erruptive flow and limestone. Probably the unexplored parts of the deposit will be found to be sulphide in character. The prospective opening of the Panama canal has given new interest to all the Pacific coast iron ore deposits and this is partly the occasion of the revival of the Las Truchas negotiations. Engineers were sent to the property, but the conclusion of any negotiations is not yet announced.

The iron ore deposits in the central part of Hidalgo, north of Mexico City, controlled by the Honey interests are being operated still on a small scale and recent developments have not increased the prospective importance of the deposits. The railroad to these deposits has not yet been completed.

The Boston syndicate which acquired the Union de Tula deposits in southern Jalisco has made little progress toward realizing its somewhat ambitious plans. A $5,000,000 company was organized and a railroad to connect with the Ameca line from Guadlajara was projected. The ore is of exceptionally good grade and the deposits have been worked by the natives for centuries on a small scale making an excellent product by primitive means.

Iron Deposit in Sonora

Near Cedros, 35 miles north of Bacauri, in southern Sonora, Mex., is an iron deposit of considerable extent, which may at some early date be utilized if present plans are carried out. The deposit is reported to be in the form of a hill 300 feet high, and several hundred feet wide, and extends about three-quarters of a mile. The ore is hematite, and reported to be of good grade, but the fact that it contains traces of copper carbonates, and is said to show as much as $4 in gold in some parts, gives the suggestions that the deposit is the oxidized iron cap of an extensive sulphide deposit, which will, of course, at short depth terminate the iron deposit, and may possibly prove to be of too low grade to be of value in copper or the precious metals. However, it is reported that there is a large tonnage of iron available. The district lies between the Yaqui river branch of the Southern Pacific and Sonora railroad, and is about 50 miles from the railroad. It was once located by Col. William C. Greene, of Greene-Cananea fame, but no attempt at development was made. It has recently been investigated, and some denouncements of the more available portions of the deposits made in the interest of Americans.

The disturbed political conditions in Mexico for more than a year past have curtailed construction and industrial activities generally and greatly and as a consequence the imports of American and foreign iron and steel goods except guns have greatly fallen off.

Shorter Hours Advocated by Cabot and Fitch

While Judge Gary Tells What Has Actually Been Accomplished in Improving Conditions of Labor—Obstacles in the Way

Charles M. Cabot, of Boston, a stockholder of the United States Steel Corporation, who has criticized the labor conditions maintained by that Corporation, is now agitating the abandonment of the 12-hour work day in the steel industry. Mr. Cabot has addressed a letter to the stockholders of the Steel Corporation urging them to address Chairman E. H. Gary in favor of the adoption of a shorter work day or to voice protests in person at the annual meeting of the Steel Corporation in April. He enclosed with his letter an article written especially for him on "Hours of Labor in the Steel Industry," by John A. Fitch, who is the author of numerous articles on labor conditions in the steel industry at Pittsburgh and other centers which have been appearing in *The Survey*.

With the letter of Mr. Cabot has also gone forth a letter by Chairman E. H. Gary, of the Steel Corporation, addressed to the stockholders, which sets forth the position of the Steel Corporation upon the advisability of adopting a shorter and uniform work day. Judge Gary's letter is as follows:

To the Stockholders of the United States Steel Corporation:

"Some time ago, Charles M. Cabot, of Boston, who has held for some years a small amount of stock in the Corporation, requested a list of stockholders so that he might send to them an article which he had caused to be published on the subject of conditions of labor in the steel mills. The Corporation resisted this demand because we considered the article sensational and misleading. Mr. Cabot then moved at the annual meeting of stockholders that a committee be appointed to investigate conditions of labor in our mills. The resolution was approved by officers of the Corporation and unanimously adopted. The committee was appointed, is now at work and will report to the stockholders as soon as a thorough investigation can be made.

"Meanwhile we are permitting Mr. Cabot to send out the enclosed paper on "Hours of Labor in the Steel Industry," by John A. Fitch. We think Mr. Fitch is so ardent in support of changes which he believes necessary that he writes as an advocate rather than a judge. Moreover, we doubt whether his experience with the steel industry is sufficient to qualify him to solve problems which we have not yet been able to solve though we have long given them earnest consideration and effort resulting in much improvement of conditions.

"Our reply to Mr. Fitch's criticism is that we are not indifferent or self-satisfied as to conditions among our workmen. We are trying to improve their conditions as fast as practicable. Hours of labor in the steel mills of this country grew up with the industry; they were not established by us, and we cannot change them all at once. Year by year, conditions have been improved until we believe that our employes are on the whole as well treated as those in any other industry and much better treated than ever before in the steel and iron industry. The heaviest work has been done away with and all work has been lightened by the introduction of machinery. Seven-day labor no longer exists in our mills, except under special circumstances, and with it the 24-hour turn has been practically abolished. While perhaps half of the men employed in blast furnaces and rolling mills have a 12-hour day, more or less modified by periods of rest, only 25 per cent of all the employes of the Steel Corporation work 12 hours a day and the 12-hour day is confined almost entirely to those departments where operations are continuous. In most of those departments, it does not seem practicable as yet to substitute eight hours of labor for 12. The men do not wish a change which will reduce their wages one-third and business conditions do not permit an increase in wages. We are spending annually for improvement of conditions among our workmen very great sums which would otherwise be available for dividends.

Relief for men injured and the families of men killed, which is paid in all cases regardless of legal liability, costs each year, approximately	$2,000,000
Accident prevention, in which we have probably the most effective system in the United States, costs each year, approximately	750,000
Sanitation and welfare work of all sorts, which are now developing, costs already each year, approximately	1,250,000
The pension fund, which provides support for superannuated employes, requires each year (a) for pension payments, approximately	200,000
(b) for the creation of a permanent fund to be completed in 13 years	500,000
Annual expenditure for these purposes	$4,700,000

Wages have not been reduced, but on the contrary have been increased nearly 25 per cent since the Corporation was organized; and the workmen have not been required to contribute in any way to the expenditures for their benefit.

While we believe all our stockholders will approve these expenditures, we have not felt that the amount should be increased more rapidly, or that conditions which have existed ever since the industry was established could practicably be improved with greater rapidity than we have been endeavoring to improve them.

ELBERT H. GARY,
Chairman.

Mr. Fitch's Paper.

On the title page of Mr. Fitch's document are the words: "Hours of Labor in the Steel Industry: A Communication to 15,000 Stockholders of the United States Steel Corporation." Mr. Fitch says in part:

There are many company heads and plant managers who are opposed to a 12-hour schedule, and probably they number many more than I would naturally think, for no individual, not even a president of a company, could change a schedule of hours over night. How many they may be who have labored manfully, year in and year out, in directors' meetings, against a stone wall of opposition, for changes that they know are necessary in common justice to the workers, we may never know. Neither may we know how many there are who, through loyalty to their associates, defend before the public conditions in the industry that they in their hearts abhor, and would change if they could.

"You social workers aren't fair," was the outburst of a manager, out of the thick of his fight, where he was struggling to put a bankrupt mill on a paying basis and was being hounded

for dividends at a time when he was trying to get money to improve the company houses. "You think lightly and talk lightly about burdens that you don't know anything about."

President Schiller, of the National Tube Co., a Steel Corporation company, told me that he did not believe in 12 hours as a working schedule, and that in the properties of his company they had gone as far as possible toward a 10-hour day, with the result, as I am convinced also, from personal investigation, that there is a larger proportion of 10-hour workmen in the National Tube Co.'s plant at McKeesport than in any other large steel plant in the Pittsburgh district.

Charles S. Price, president of the Cambria Steel Co., at Johnstown, Pa., a company employing 18,000 or 19,000 men, also expressed his opposition to a 12-hour day. The Cambria company, as near as I can learn, has a larger proportion of eight-hour men than any other steel company in America. Mr. Price says that he believes in the eight-hour day, that it is more satisfactory and makes better workmen, but his company can go no further with it until its competitors abandon the 12-hour schedule. And there he strikes the crux of the whole matter.

But there are steel men, nevertheless, who not only do not apologize for, but actively defend, the existing state of affairs. A majority of the managers whom I have met, including representatives of nearly all of the largest steel companies in the United States, have defended the 12-hour day.

One Day of Rest in Seven.

There is coming to be a different attitude in regard to the seven-day week. Managers may excuse it, but they seldom advocate it any more. And there has arisen a movement within the last two years that seems to mean that the steel industry is not going to tolerate much longer the vice-breeding, man-killing thing. May 7, 1910, William B. Dickson, then first vice president of the United States Steel Corporation, at the first annual meeting of the American Iron and Steel Institute, said in a speech before the leading steel men of the country: "The present conditions which necessitate the employment of the same individual workman 12 hours a day, for seven days a week, are a reproach to our great industry and should not, in our enlightened age, be longer tolerated."

At this meeting a committee was appointed by the president of the Institute, Judge Gary, to devise a plan for so arranging the shifts that even in the continuous processes each man might have a day of rest every week. That committee has made its investigation, and drawn up a plan fully covering the situation. And this plan, which gives every man 24 continuous hours of rest every week, and which abolishes the iniquitous 24-hour shift, has been adopted, with a few modifications, by the Lackawanna Steel Co., and, I am told, either has been or is to be adopted by every subsidiary company of the United States Steel Corporation. By the time this article appears in print, other companies will undoubtedly have joined them.

Competition and the 12-Hour Day

But the 12-hour day remains. The industry has at last granted a weekly day of rest, but as regards the length of the working day it is 50 years behind the industrial standards now recognized by a majority of the people. If you suggest a change, the answer is "competition."

Steel company officials have even insisted in talking with me that the hour question is settled by world competition and that America can adopt eight hours only when Europe does. As a matter of fact, a considerable number of English steel mills and blast furnaces are now running on an eight-hour schedule. But the Germans are the strongest competitors of the American producers in the markets of the world, and their mills are running on a 12-hour basis. To win the foreign market perhaps our mills will have to maintain the same schedule. But does any American believe that the foreign market is worth such a shattering of American standards? I do not.

So far as conditions at home are concerned, the Steel Corporation officials claim that competition is too keen to permit them to adopt a shorter work-day until other companies do. And there can be no reasonable doubt that as long as there is competition it would be a very difficult thing for an independent company to increase its labor cost by going to an eight-hour basis when other companies remain on the old schedule.

But is this the final answer? Is there no way to protect progressive employers, who would like to introduce reasonable and humane regulations into their relations with their employes, from the competition of the reactionaries?

It depends to some extent on whether those responsible for these conditions care to have them changed. For the responsibility cannot all be left with the managers. The public that uses elevators, that does business in steel-framed buildings, that rides on steel rails and is now demanding steel cars in which to ride—the insatiable demand of the public is a thing that puts heavy burdens on producers. And the stockholders who want dividends and who, therefore, are responsible for the search for more and wider markets and faster and faster production of steel—these, too, are putting heavy burdens on producers.

There are three methods by which protection can be afforded: the collective demand of the organized workers, action by the stockholders, or legislation by the state. The steel companies made the first method impossible. It remains, apparently, for the stockholders to determine which of the two other methods is to be employed. For one of them must be.

The plant of the Lucknow Iron & Steel Co., at Pine Forge, Pa., is being repaired. The Brandywine Mfg. Co., Philadelphia, will probably operate the plant for some time to come.

LONE ACTIVE MILL

On Manhattan Island to be Dismantled—Purchased for Scrap.

Manhattan Island is about to lose the only active rolling mill plant within its borders. The works of the Manhattan Rolling Mill, located along the East River on Avenue A, have been purchased by Frank Samuel, Philadelphia, and will be dismantled and scrapped. The mill, which is of small size, was built in 1892, and has been operated quite continuously up to two months ago. Its equipment consists of two heating furnaces and one train of 10-inch and one of 18-inch rolls. It has an annual capacity of about 2,500 tons of horseshoe iron and horseshoes working on single turn. The only other rolling mill on Manhattan Island, is at Fortieth street and Eleventh avenue, and has not been operated in recent years.

The Lohmannizing Process

To the EDITOR:—

Referring to the article published in the March 14 issue of THE IRON TRADE REVIEW, entitled "The Lohmannizing Process," we wish to call attention to the fact that, while the article in the main is correct, the closing paragraph is incomplete, inasmuch as the Lohmannizing process as adapted to sheet steel was developed and perfected in the plant of the Deforest Sheet & Tinplate Co. more than a year ago. Since that time, thousands of tons of Lohmannized sheet steel have been produced by this concern. The Deforest Sheet & Tinplate Co. has installed special equipment for the Lohmannizing of not only sheet steel, but all kinds of ferrous articles, whether plain or fabricated, and ranging in size from a small wire nail to a steel gondola car.

WADE A. TAYLOR,
Pres., Deforest Sheet & Tinplate Co.
Niles, O., March 23.

Foremen Elect.—At the annual meeting of the Metal Trades Superintendents' and Foremen's Club, of Cleveland, the following officers were elected for the year: President, John N. Mortimer, of the Central Brass Mfg. Co.; vice president, L. W. Bosley, of the Cleveland Hardware Co.; treasurer, F. W. Sebelin, of the Hill Clutch Co., all of Cleveland.

The Edgemont Machine Co., Dayton, O., is having plans prepared for a two-story and basement factory and office building, 70 x 90 feet. E. J. Mountstephen, 27 McIntyre building, Dayton, is the architect.

Government Will Regulate Wages of Employes

On Railways, Said Chairman Prouty at Annual Dinner of Traffic Club of Pittsburgh—Co-operation of Railroads and Shippers Urged

Co-operation between railroads and shippers, and between the two and the government as the only solution to the great problem facing the people of the United States, was the keynote of a thoughtful discussion that marked the tenth annual dinner of the Traffic Club of Pittsburgh, at the Fort Pitt hotel last Thursday evening. The dinner was by far the most elaborate ever given by this pioneer traffic club, and was attended by the largest gathering of railroad officials, iron and steel manufacturers and government officials, that has ever been present on such occasions. Burns D. Caldwell, president of Wells, Fargo & Co., of New York, was toastmaster, and the two chief speakers were Edward T. Jeffrey, of New York, chairman of the board of the Denver & Rio Grande, and president of the Western Pacific Railroad; and Charles A. Prouty, chairman of the Inter-State Commerce Commision of Washington. Mr. Caldwell, acting as toastmaster, said: "It is impossible to contemplate any proper conduct of the transportation conditions under existing conditions without recognition of the inter-dependence between the shipper and the carrier. Hence, the doctrine of co-operation has become orthodox to both, and while it may not have reached its full measure, its principles are firmly fixed, and it is the only secure basis of future progress. In view of the extension and increased scope of the commerce commission in the regulation of transportation rates and practice, is it not the part of wisdom to accept them as an essential part of our commercial structure, and to seek to establish the right relation therewith? If so, it seems to me there can be but an affirmative answer to the question; shall the relation be one of opposition based on feelings of interference, injustice and resentment, or shall it be one of co-operation based upon a recognition of joint interests and obligation? Such co-operative relation between these interests should lighten the present burdens of the commissions and enlarge their usefulness as well as extend their influence in prompting a better relation between the carrier and shipper, who need, much of the time, the directing hand of an unbiased but mutually controlling agency to enable them to reach amicable adjustments." The speaker earnestly advocated the co-operative principle to include another element or agency than the shipper and transportation company in that of the national and state commerce commissions.

After thus expressing himself, Mr. Caldwell called upon Edward T. Jeffrey, who in part said:

"We have arrived at a point where the greatest, or if not the greatest, at least the second greatest interest of the land, is no longer in actual management of those who put their money into it. Public tribunals are established to determine just and reasonable railroad rates. The rates control the revenues, the revenues control the managers and the owners, and the revenues control the bankers, for when the margins of profit are small, banking must be done on excessive terms. Under that wise national statute, the Erdman Act, it can scarcely be said that transportation interests control the price of labor, because our national congress has clearly indicated its judgment, that arbitration is preferable to serious labor disturbances. Congress in its wisdom has established an Inter-State Commerce Commission and several states have created commissions for similar and more limited purposes. These are the boards of arbitration that are the national arbitrators, before whom, you, and I, and everyone, has the right to appear to express our views. These tribunals are our tribunals, and we can safely entrust, as time has demonstrated, these grave questions to the arbitrament of our courts."

The final speaker, Charles A. Prouty, said, in part: "Conditions today from the standpoint of the shipper are infinitely better than they were 15 years ago. Today, every man pays the same rate as his competitor. Every man knows what that rate is, and can assume that his contract will be fulfilled upon the same rate under which it was made. There is a tribunal power to hear and correct alleged grievances. From the standpoint of the railroads, the conditions are better, or should be, for it is certainly more comfortable to the traffic official to act within, than to be habitually without, the law, but disregarding this sentimental aspect, it is better, for today it would be possible very materially to advance the public railway rates of this country, and once this rate has been filed, it must be, and is, maintained. On the other hand, the government now exercises the right to determine what rate shall be fixed. So, from now on, what the gross revenues shall be, rests with the government. This being so, what security has an investor that this authority will be justly exercised, what assurance is there that rates will not finally be forced down to an unprofitable level, or if an increased cost of operation makes an advance in rates necessary, that this advance will be permitted? In a word, what protection has the vast investment which is represented by railways of this country? First of all, there is the protection of the courts. In my own opinion that protection will not prove satisfactory. The Supreme Court of the United States, has decided itself, that the making of a railway rate is a legislative function. There is no rule of law by which the reasonableness of a rate can be determined. There is no exact formula upon which it can be compiled, when throughout, it will be seen in every case that the determination of a reasonable railway charge involves the exercise of judgment brought to bear upon the circumstances of the case. This is the method by which the traffic officials make a rate, and their action must be reviewed by the same method, if it is to be fairly and intelligently examined. There can be no intelligent review of the Legislative Act by judicial process, and there can be no effective regulation of railway rates so long as the administrative acts of the legislative body can be reviewed by the courts. Ultimately, the legislature will be left supreme in the domain where the exercise of legislative judgment is given. This means that the court can stand between the railway and confiscation, but it will not be allowed to determine how profitable the railway investment shall be, for that is not the business of the court. In all that vast realm covered by the word reasonable, within the zone bounded by confiscation on one side and a reasonable rate on the other, the legislature will dominate. Our courts today, do not possess the confidence of the masses, as is evidenced by the favor accorded the demand for the recall of judges and of the decisions of judges. The reason of this is to be found largely in the disposition of the judges, especially Federal judges,

to invade the legislative domain and restrain legislative action."

The speaker in concluding, referred guardedly to the recent demands for increasing wages by railroad employes. He said, that in-as-much as the government now regulates rates which the railroads may charge the public for transportation, the government must sooner or later, regulate the cost of labor to railroads ,because that cost was a direct charge upon the public, which the government must protect.

TWENTY BLAST FURNACES

Were Dismantled and Eight New Ones Built Last Year.

The *Bulletin* of the American Iron and Steel Association says:

In 1911 there were eight entirely new blast furnaces built in the United States, all coke, with an annual capacity of 1,152,500 gross tons. Three of the furnaces, with an annual capacity of 437,500 tons, had not been blown in down to Jan. 1, 1912. Of the total new furnaces, five, with an annual capacity of 675,000 tons, were in Pennsylvania, and three, with an annual capacity of 477,500 tons, were in Ohio.

On Dec. 31, 1911, there were one charcoal and 12 coke blast furnaces in course of erection in the United States, with a total annual capacity of 1,744,500 tons, of which 20,000 tons were charcoal and 1,724,500 tons were coke. One or two of the coke furnaces have been completed and blown in since the opening of the present year; others are to be completed later in the year; while still others may not be ready for blast until after the opening of 1913.

During 1911, there were 20 blast furnaces abandoned or dismantled in the United States, with a total annual capacity of 404,700 gross tons. Of the total seven furnaces, with an annual capacity of 60,700 tons, used charcoal for fuel when last in blast, and 13 furnaces, with an annual capacity of 344,000 tons, used mineral fuel.

Make Note Issue

The directors of the American Rolling Mill Co., Cincinnati, have authorized a note issue of $1,500,000 of 5 per cents, of which amount $1,300,000 has been sold to Becker & Co., Chicago. The remaining $200,000 is to be held in the treasury of the company for future needs. The new notes mature in four blocks of $375,000 each. The first is payable April, 1914, the second block in October, 1914, and the third in April, 1915, and the last block in October, 1915.

Richard H. Marr is letting contracts for a factory for the American Brass Co., Detroit, at Trombley and Crystal avenues.

INSTITUTE MEETING

Will be Held in New York May 17 and 18—Program in Rough.

The annual meeting of the American Iron & Steel Institute in connection with which an interesting formal program will be rendered before an assemblage of the full membership of the organization, will be held at New York City Friday and Saturday, May 17 and 18. These dates were fixed upon and the program of the meeting definitely discussed at a meeting of the directors of the institute at New York March 22. The place of the meeting will in all probability be at the Waldorf-Astoria.

As generally outlined, the program will embrace both forenoon and afternoon sessions on Friday, the opening day, at which papers and addresses on metallurgical, engineering, welfare and other topics of direct interest to the institute members will be presented by expert authorities. The subjects and the speakers of these sessions are now being arranged. On Friday evening, a banquet will be held. Saturday will be given over to a trip about New York City by the institute members in a body. There are many important engineering feats now in progress of consummation in the metropolis, including new subway building, the construction of the giant Woolworth skyscraper, the building of the Hell Gate bridge and other projects which, in connection with the other wonders of the great city, offer especial interest to steel makers for careful inspection. The details of this trip are still in the rough, and more definite announcement of what it will embrace, will be made later.

The annual meeting of the institute this year is expected to call forth the attendance of a large proportion of its full membership. It will be the first general meeting of the institute since the formal sessions of October, 1910, in New York City. The arrangements for the meeting are in the hands of a general committee composed of the six New York resident directors. These are F. S. Witherbee, president of Witherbee, Sherman & Co., chairman; E. H. Gary, chairman of the United States Steel Corporation; E. A. S. Clarke, president of the Lackawanna Steel Co.; John A. Topping, chairman of the Republic Iron & Steel Co.; James A. Farrell, president of the United States Steel Corporation, and Charles M. Schwab, president of the Bethlehem Steel Corporation.

Will Improve Works.—Preparations have been made for some general improvements to the Riverside plant of the National Tube Co., at Benwood, W. Va. This will consist of a more or less rehabilitation of the plant, which will render it more strictly modern, but no extensions of steel works, pig iron or finishing capacity are contemplated.

Proposed Interstate Trade Commission

A draft of a bill to create an interstate trade commission has just been submitted to the committee on interstate commerce of the Senate by J. F. Callbreath, secretary of the American Mining Congress. The draft was prepared in response to a request from the senate committee at a public hearing at which Glenn W. Traer, Walter M. Bogle and Samuel A. Taylor, representing the coal operators' associations of Illinois, Indiana and Pittsburgh, respectively, and Mr. Callbreath gave testimony concerning the need of the bituminous coal mining industry for remedial legislation.

The bill is intended to empower the commission to investigate trade agreements and would provide for the submission to the commission of any agreements for approval or disapproval. Mr. Callbreath prepared the draft of the bill with a view of securing a law that would permit a reasonable getting together of coal operators in order that it might be possible to meet the public sentiment favoring greater safety for the men employed, better conservation of the fuel resources and at the same time secure a fair profit upon the costs of operation and the capital invested.

Ferro Alloys Last Year

The *Bulletin* of the American Iron and Steel Association says:

During the calendar year 1911, 3,679,335 pounds (1,643 gross tons) of ferro-titanium alloy were shipped by an American producer to 79 manufacturers of steel in the United States. Of the total quantity shipped 20 plants which make ingots, but not castings purchased 525,295 pounds, 44 plants which make castings, but not ingots purchased 136,425 pounds, and 15 plants which make both ingots and castings purchased 3,017,615 pounds. In addition 129,440 pounds were exported. The average consumption of ferro-titanium in the manufacture of steel is about four-tenths of one per cent, or about 8.96 pounds per gross ton.

We learn from the Vanadium Sales Co. of America that in the calendar year 1911, it shipped 689,510 pounds of ferro-vanadium to 57 plants in the United States and Canada which manufacture steel ingots or castings.

The Emerson Brantlingham Co., Rockford, Ill., is having plans prepared for the erection of a new foundry.

New Buyers

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

The following manufacturing companies have filed articles of incorporation:

The National Steel Housing Co., Milwaukee; $100,000; by Geo. Jiras, John Loehner and Anthony E. Fless.

The Williamson Machinery Co., Milwaukee; $5,000; by S. R. Williamson, J. F. Curley and Geo. Harry.

The General Machinery Mfg. Co., Los Angeles; $25,000; by P. A. Coon, C. A. Bettinger and F. D. Coon.

The American Pump Co., Los Angeles; $20,000; by C. U. Martin, F. J. Bruguiere and P. H. Coop.

The Smith-Backman Machine Co., Youngstown, O.; $10,000; by Horace L. Smith, Carl Hildebrand, Ed. C. Backman.

C. L. Grant, Inc., Hartford, Conn.; $50,000; to manufacture artesian well machinery; by Charles L. Grant, Clara Grant, Hartford; C. E. Grant, Coventry.

The Modern Stove Co., Chicago Heights, Ill.; $125,000; to manufacture cooking and heating devices; by J. R. Hobrecker, Wm. Boeck and Geo. A. Brinkman.

The Multi-Rate Co., Dayton, O.; $10,000; to manufacture recording devices and machines; by H. E. Talbot Jr., Andrew C. Davison, Joseph H. Crane, Ezra M. Kuhns and Chas. A. Craighead.

The Western Boiler & Steel Co., Los Angeles, Cal., has been incorporated with a capital stock of $50,000. The directors are E. A. MacGillvray, G. W. Darby, D. M. Ward, C. F. Tope and Evan Davis.

General Industrial

The Buchanan Electrical Steel Co., Chicago, has increased its capital stock from $150,000 to $250,000.

The Arkansas Corrugated Metal Culvert Co., Little Rock, Ark., has surrendered its charter.

The Kenney Machinery Co., Indianapolis, has been granted authority to issue $30,000 preferred stock.

The Champion Machinery Co., Joliet, Ill., has increased the number of its directors from three to five.

The Ornamental Iron & Bronze Co., Cleveland, has increased its capital from $15,000 to $60,000.

The Massillon Iron & Steel Co., Massillon, O., has reduced its capital stock from $2,000,000 to $900,000.

The Buffalo Electric Vehicle Co., Buffalo, N. Y., a merger of five concerns of that city, has been incorporated with a capital stock of $1,000,000.

The Advance Stove Works, Evansville, Ind., which increased its capital stock recently, advises that no improvements are contemplated.

The plant of the Central Foundry Co., Oklahoma City, Okla., has been completed. M. K. Weigel is president.

Michael T. Horner, vice president of the Montford Machine Co., Baltimore, has purchased the plant of the Montford Machine Casting Co., that city. He will continue to operate it.

The Illinois Metal Refining Co., Rockdale, Ill., whose recent increase of capital stock was noted, advises that the increase was necessitated because of the enlargement of the original plant of the company.

Stockholders of the Moline Pressed Steel Co., Moline, Ill., at their annual meeting, re-elected retiring directors, who continued the old officers, as follows: President, Fred Lundahl; secretary and treasurer, William Powell.

The Detroit Steel Products Co., Detroit, has just completed a large addition, 100 x 270 feet, to its Fenestra window department. It is entirely of fireproof construction. A large number of specially designed punches and presses are being installed.

The Noelke-Richards Iron Works, Indianapolis, advises in regard to a recent increase of capital stock, which was noted, that it occurred in connection with its purchase of the Brown-Ketcham plants, one at Pittsburgh, Huff Station, and one at Indianapolis.

The United Refrigerator Co., Kenosha, Wis., is planning to make several important extensions this year. The company manufactures ice and refrigerating machinery. The present officers were all re-elected at the annual meeting in Augusta, Me. Peter B. Nelson is president.

The National Steel Post & Fabric Co., Enid, Okla., is considering moving to Cincinnati in the near future. G. A. Anderson, president of the company, has been in Cincinnati for some time, making the necessary arrangements. The company employs about 100 men.

The Pennsylvania Engineering Works, New Castle, Pa., has commenced construction on two blast furnaces for the Minnesota Steel Co., near Duluth, Minn., and last week forwarded a force of men to that point where material is being assembled.

O. H. Bateman, H. D. Montgomery, Neil W. McGill, Charles B. Prichard and W. A. Shaffer appear as incorporators of the Charleston-Kanawha Coke Co., which is being chartered at Charleston, W. Va., with an authorized capital of $16,000,000. It is understood the company will operate in the Kanawha field.

An issue of $1,000,000 two-year 6 per cent notes of the Pope Mfg. Co., Hartford, Conn., has been purchased by a Boston syndicate. The issue is designed to fund a floating debt of $250,000 and leave a substantial balance for additional working capital in preparation for manufacturing cars for the 1913 season.

The Union Twist Drill Co., Chicago, advising in regard to a fire which visited its plant, says the building it occupied was damaged to some extent, but no severe loss was suffered. A few of the tools became wet, but the majority of the stock was not damaged. The company has moved to temporary quarters at 568 Washington boulevard, and is filling orders as usual.

Directors of the Illinois Iron & Bolt Co. and Star Mfg. Co., both of Carpentersville, Ill., have voted to call a meeting of stockholders April 24 to vote upon the question of consolidating the plants. If the proposition carries the new company will be known as the Illinois Iron & Bolt Co., and will have a capital of $1,850,000. The Star Co. will continue to operate under the present management, but as a branch of the I. I. & B. Co.